

EXHIBIT 9

Expert Report of

**Dr. Harold W. Goldstein
Dr. Charles A. Scherbaum**

Darryl Chalmers, et al. v. City of New York

Case No. 1:20-cv-03389-AT

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Executive Summary

We have been retained by plaintiffs' legal counsel to examine (1) whether fire inspector job titles in the New York City Fire Department ("FDNY") are similar to the inspector job titles in the New York City Department of Buildings ("DOB") in terms of the nature of the work that is performed by those in these job titles, (2) whether there are disparities in the race composition between inspectors in the FDNY and inspectors in the DOB, (3) whether there are statistically significant disparities in the compensation received between inspectors in the FDNY and inspectors in the DOB, and (4) based on the comparison of the jobs whether there is a job-relevant rationale in terms of the nature of the work that is performed for why the job should be paid differently.

Our review considered the job titles of fire protection inspector (FDNY), construction inspector (DOB), boiler inspector (DOB), low pressure boiler inspector (DOB), elevator inspector (DOB), hoist and rigging inspector (DOB), plumbing inspector (DOB), multi-discipline inspector (DOB), associate fire protection inspector (FDNY), associate construction inspector (DOB), associate boiler inspector (DOB), associate low pressure boiler inspector (DOB), associate elevator inspector (DOB), associate hoist and rigging inspector (DOB), and associate plumbing inspector (DOB).

- We find between 2005 and 2020 that the race composition of the inspector jobs at the FDNY has been statistically significantly different than the race composition of the inspector jobs at the DOB. During these years, the majority of the DOB inspectors were White whereas the majority of the FDNY fire inspectors were Asian, Black, or Hispanic. In 2018 (the last year for which we had data for the agencies as a whole), the race composition of the employees at the DOB and FDNY as a whole were essentially the opposite of the race composition of the employees of the FDNY and DOB in inspector job titles.
- Using standard methods from industrial and organizational psychology for comparing the similarity of jobs and data from the U.S. Department of Labor and New York City, we find that the FDNY and DOB inspector jobs are similar in terms of the tasks performed and the required worker characteristics to perform these tasks.
- We find that in every fiscal year between 2005 and 2020, DOB inspectors receive a statistically significantly higher hourly pay rate than FDNY inspectors at both the new hire and incumbent salary levels. The disparity in the hourly rates has grown over time.
- Even after controlling for job relevant factors, we find that the DOB inspectors are paid substantially more per hour than FDNY inspectors.
- Differences in tenure are not an explanation for DOB inspectors having higher hourly pay; between 2005 and 2020, FDNY fire inspectors have had longer or equivalent tenure to DOB inspectors.
- Based on our review and comparison of the jobs in terms of the nature of the work (i.e., the activities performed and the capabilities needed to perform these activities), we have not seen a job-relevant rationale for why these similar jobs would be paid differently.

In summary, we find that the FDNY and DOB inspector jobs are similar, the DOB inspectors are paid statistically significantly more per hour than FDNY inspectors, the FDNY inspectors are

historically predominately Black, Hispanic, or Asian, and the DOB inspectors are historically predominately White, and we have not seen a job-relevant rationale for why the jobs are paid differently in terms of the work performed.

If additional data or information becomes available to us following the submission of this report, we reserve the right to supplement the current report based on additional work that we are asked to perform.

Expert Qualifications

Dr. Harold Goldstein

Dr. Harold W. Goldstein received his M.S. and Ph.D. in industrial and organizational psychology from the University of Maryland. He earned a B.S. in psychology from the University of Michigan.

Dr. Goldstein is a tenured and full professor of industrial and organizational psychology at Baruch College, City University of New York. He teaches courses at the undergraduate, masters, executive, and doctoral levels on employee selection and leadership. He is the director of the M.S. program in industrial and organizational psychology at Baruch College.

Dr. Goldstein is an expert on employee selection procedures and job analysis. His research on these topics has appeared in peer-reviewed journals such as *Journal of Applied Psychology*, *Personnel Psychology*, *Educational and Psychological Measurement*, *Human Resource Management Review*, *Industrial and Organizational Psychology*, and *Personnel Assessment and Decisions*. He has authored many chapters in edited books. He has made over 100 invited and peer-reviewed presentations at national and international professional meetings and conferences on topics including employee selection procedures, job analysis, adverse impact, and test validation.

Dr. Goldstein is or has been on editorial boards of the top peer-reviewed journals in industrial and organizational psychology including the *Journal of Applied Psychology* and *Journal of Business and Psychology*.

Dr. Goldstein was one of the winners of the 2011 and 2021 M. Scott Myers Award for Applied Research in the Workplace from the Society for Industrial and Organizational Psychology for his work on cognitive ability testing and test validation. He was also one of the winners of the 2011 and 2017 Innovations in Assessment Award from the International Personnel Assessment Council for his work on cognitive ability testing and test validation.

Dr. Goldstein has worked with a variety of organizations in the public and private sector conducting job analyses and developing and validating selection procedures for jobs ranging from firefighters to school principals to accountants to NFL players. He has served as an expert in both active litigation and settlement agreements involving employment discrimination over the past five years. Dr. Goldstein was one of the primary experts for the Vulcan Society in *Vulcan Society v. City of New York* (07-cv-2067 (NGG) (RLM)). He has also worked as an expert for the United States Department of Justice. A list of cases where Dr. Goldstein was involved as an expert along with his scholarly contributions are included in his vita which is attached as Appendix A. His billing rate for expert services in this case is \$350 per hour.

Dr. Charles Scherbaum

Dr. Charles A. Scherbaum received his M.S. and Ph.D. in industrial and organizational psychology from Ohio University. He earned a B.S. in psychology from the University of Washington.

Dr. Scherbaum is a tenured and full professor of industrial and organizational psychology at Baruch College, City University of New York. He teaches courses at the undergraduate, masters, executive, and doctoral levels on employee selection, performance management, research methods, statistics, and psychometrics. He is the director of the Ph.D. program in industrial and organizational psychology at the City University of New York.

Dr. Scherbaum is an expert on employee selection procedures, job analysis, statistical methods, and test validation. His research on these topics has appeared in peer-reviewed journals such as *Personnel Psychology*, *Organizational Research Methods*, *Educational and Psychological Measurement*, *Human Resource Management Review*, *Industrial and Organizational Psychology*, and *Personnel Assessment and Decisions*. He has authored a book on statistical methods published by Sage and authored many chapters in edited books. He has made over 140 invited and peer-reviewed presentations at national and international professional meetings and conferences on topics including employee selection procedures, job analysis, test validation, and psychometric methods.

Dr. Scherbaum is on editorial boards of the top peer-reviewed journals in industrial and organizational psychology including the *Journal of Applied Psychology*, *Organizational Research Methods*, *International Journal of Selection and Assessment*, *Journal of Business and Psychology*, *Industrial and Organizational Psychology: Perspectives on Science and Practice*, and *Personnel Assessments and Decisions*.

Dr. Scherbaum was one of the winners of the 2011 and 2021 M. Scott Myers Award for Applied Research in the Workplace and the 2018 Adverse Impact Reduction Research Initiative and Action Award from the Society for Industrial and Organizational Psychology for his work on cognitive ability testing and test validation. He was also one of the winners of the 2011 and 2017 Innovations in Assessment Award from the International Personnel Assessment Council for his work on cognitive ability testing and test validation.

Dr. Scherbaum has worked with a variety of organizations in the public and private sector conducting job analyses and developing and validating selection procedures for jobs ranging from building inspectors to school principals to accountants to NFL players. He has served as an expert in both active litigation and settlement agreements involving employment discrimination in compensation and selection procedures over the past five years. He has worked as an expert for the United States Department of Justice and the Equal Employment Opportunity Commission. A list of cases where Dr. Scherbaum was involved as an expert along with his scholarly contributions are included in his vita which is attached as Appendix B. His billing rate for expert services in this case is \$350 per hour.

Overview

We have been retained by plaintiffs' legal counsel to examine (1) whether fire inspector job titles in the New York City Fire Department ("FDNY") are similar to the inspector job titles in the New York City Department of Buildings ("DOB") in terms of the nature of the work that is performed by those in these job titles, (2) whether there are disparities in the race composition between inspectors in the FDNY and inspectors in the DOB, (3) whether there are statistically significant disparities in the compensation received between inspectors in the FDNY and inspectors in the DOB, and (4) based on the comparison of the jobs whether there is a job-relevant rationale in terms of the nature of the work that is performed for why the job should be paid differently.

Our review considered the job titles of fire protection inspector (FDNY), construction inspector (DOB), boiler inspector (DOB), low pressure boiler inspector (DOB), elevator inspector (DOB), hoist and rigging inspector (DOB), plumbing inspector (DOB), multi-discipline inspector (DOB), associate fire protection inspector (FDNY), associate construction inspector (DOB), associate boiler inspector (DOB), associate low pressure boiler inspector (DOB), associate elevator inspector (DOB), associate hoist and rigging inspector (DOB), and associate plumbing inspector (DOB).¹ All of these jobs are covered by civil service policies and procedures including civil service testing for entry level positions (inspector positions) and promotional positions (associate inspector positions).

The number of inspectors in each agency and job title between 2005 and 2020 are included in Table 1.²

Table 1

Fiscal Year	FDNY	DOB							
	Fire Protection Inspector	Total	Inspector (Construction)	Inspector (Elevators)	Inspector (Hoists & Rigging)	Inspector (Low Pressure Boiler)	Inspector (Multi-Discipline)	Inspector (Plumbing)	Inspector (Boilers)
2005	121	105	73	0	3	4	0	25	0
2006	131	117	88	0	5	5	0	19	0
2007	139	132	104	0	4	5	0	19	0
2008	138	159	126	6	3	5	0	19	0
2009	121	134	99	6	4	5	0	20	0

¹ In this report, we do not include electrical inspectors or associate electrical inspectors employed by the FDNY or DOB because electrical inspectors (as well as blasting inspectors) are not considered to be fire protection inspectors at the FDNY and are not included in the proposed class.

² These data were extracted from "FDNY LIt Data - Inspector Title Employee Data (Period Spanning Jan 2004 to April 2020.xlsx)" and "Chalmers -- DCAS Data Supplement - Associate Inspector (Construction) (Jan 2004 to April 2020 - (# Legal 11791573).xlsx)"

Fiscal Year	FDNY	DOB							
	Fire Protection Inspector	Total	Inspector (Construction)	Inspector (Elevators)	Inspector (Hoists & Rigging)	Inspector (Low Pressure Boiler)	Inspector (Multi-Discipline)	Inspector (Plumbing)	Inspector (Boilers)
2010	145	107	80	1	3	5	0	18	0
2011	155	91	65	3	3	5	0	15	0
2012	155	100	54	8	3	9	4	22	0
2013	143	104	52	10	8	9	8	17	0
2014	140	116	61	14	9	7	9	16	0
2015	112	135	79	14	6	7	7	22	0
2016	135	220	115	31	8	13	6	47	0
2017	110	292	177	31	11	18	5	50	0
2018	142	344	229	29	7	16	4	59	0
2019	160	379	273	21	8	15	4	58	0
2020	181	508	378	37	6	15	5	65	2

The number of associate inspectors in each agency and job title between 2005 and 2020 are included in Table 2.

Table 2

Fiscal Year	FDNY	DOB						
	Associate Fire Protection Inspector	Total	Associate Inspector (Construction)	Associate Inspector (Elevators)	Associate Inspector (Hoists & Rigging)	Associate Inspector (Low Pressure Boiler)	Associate Inspector (Plumbing)	Associate Inspector (Boilers)
2005	104	132	67	40	5	3	14	3
2006	105	137	76	40	3	1	12	5
2007	106	171	103	40	3	0	18	7
2008	116	173	115	33	1	1	18	5
2009	148	177	121	31	2	1	17	5
2010	146	182	133	27	2	1	14	5
2011	152	168	119	27	2	1	14	5
2012	161	161	117	23	2	1	14	4
2013	173	154	113	22	1	1	13	4
2014	169	144	108	19	0	2	11	4
2015	205	158	116	18	2	2	16	4
2016	205	150	108	17	1	3	17	4
2017	215	141	96	18	2	2	19	4
2018	211	126	81	16	2	3	19	5

Fiscal Year	FDNY	DOB						
	Associate Fire Protection Inspector	Total	Associate Inspector (Construction)	Associate Inspector (Elevators)	Associate Inspector (Hoists & Rigging)	Associate Inspector (Low Pressure Boiler)	Associate Inspector (Plumbing)	Associate Inspector (Boilers)
2019	215	147	104	16	2	3	17	5
2020	214	112	98	2	2	1	5	4

As can be seen, the numbers of fire protection and associate fire protection inspectors have increased in most years and overall between 2005 and 2020 while the rate of increase of associate fire protection inspectors has exceeded the rate for fire protection inspectors. The numbers of building inspectors and associate building inspectors increased marginally between 2005 and 2015 (with some ups and downs), but the number of building inspectors more than tripled between 2015 and 2020 while the number of associate building inspectors declined. Most of the changes were attributable to a reorganization of the inspector job titles at the DOB, that included many associate inspectors becoming inspectors without a loss of salary.³

Between 2017 and 2020, there were a total of 507 unique employees in fire protection job titles. There were 230 unique employees who held the job title of fire protection inspector, 230 unique employees who held the job title of associate fire protection inspector, and 47 unique employees who held both job titles during this time period.

In the following sections of this report, we describe the methodology and findings from our review and examination. We first describe the analysis of the race composition of the inspector job titles in the FDNY and DOB. Second, we describe the comparison of the similarity of the inspector jobs of the FDNY and DOB in term of the nature of their work. Third, we describe the comparison of the compensation of the inspector job titles in the FDNY and DOB. Both Dr. Goldstein and Dr. Scherbaum conducted the review of similarity of the FDNY and DOB inspector job titles. Dr. Scherbaum conducted the analysis of disparities in race composition of FDNY and DOB inspector job titles and disparities in compensation. Dr. Scherbaum will be the testifying expert for the entire report.

³ CHALMERS_FPI_LIT-00030815

Is the Race Composition of Inspectors at the FDNY and DOB Similar?

Until 2017, the City of New York recorded race as American Indian or Alaska Native, Asian, Black or African American, Hispanic, Native Hawaiian or Pacific Islander, not specified, two or more races, or White. In 2017, the City changed the way race/ethnicity are recorded. The City removed Hispanic as a race category and added a second question that asks whether or not the individual identified as Hispanic as well as an option for unspecified.

To ensure a consistent treatment of race in all years, these separate data fields were combined to create a race variable. The race variable was created following the procedures used in the New York City Workforce Profile Reports.⁴ As described in the appendix of the 2018 Workforce Profile Report:

“All employees are categorized as either male or female, and either white, black, Hispanic, Asian, or some other race (SOR). SOR includes American Indian/Alaskan Native, two or more races, and unspecified race. Native Hawaiian or other Pacific Islanders are classified as Asian.” (p. 89)

Individuals who responded “yes” to the question about identifying as Hispanic were classified as Hispanic regardless of the race selected. Individuals who responded “no” or “not specified” to the question about identifying as Hispanic were classified as the RACE selected.

In addition to specific race groups, the New York City Workforce Profile Reports include a classification of White vs. Minority. The City of New York defines minority as all groups that are not White, including those in the Some Other Race category. In the analyses included in this report, those in the Some Other Race category were not included. Therefore, minority only includes Asian, Black, and Hispanic. Additionally, individuals in the SOR category were excluded from calculations of the percentages of each race in the inspector jobs at the DOB and FDNY and from all of the analyses in this report. The percentage of inspectors in the SOR category each year is sufficiently small that the inclusion of some or all of them would not change the conclusions concerning the race composition of inspectors at FDNY and DOB.

According to the 2018 New York City Workforce Profile Report, across all job titles at the DOB, the workforce is 36% white and 64% minority.⁵ For the FDNY, 66% of the workforce is white and 34% is minority.⁶

Table 3 includes the percentages for white and minority employees considering only inspector job titles at the DOB and FDNY for each year between 2005 and 2020.⁷ As can be seen in the table, the general pattern of representation of white and minority employees at the FDNY and DOB included in the 2018 New York City Workforce Profile Report reverses for inspector titles.⁸ Although the workforce of the DOB was predominately minority at least in 2018, the

⁴ [Workforce Reports - Department of Citywide Administrative Services \(nyc.gov\)](https://www.nyc.gov/workforce-reports)

⁵ [NYC Workforce Profile \(shinyapps.io\)](https://shinyapps.io). Data pulled on 5/20/2021.

⁶ [NYC Workforce Profile \(shinyapps.io\)](https://shinyapps.io). Data pulled on 5/20/2021.

⁷ The race data were extracted from “FDNY LIt Data - Inspector Title Employee Data (Period Spanning Jan 2004 to April 2020.xlsx)” and “Chalmers -- DCAS Data Supplement - Associate Inspector (Construction) (Jan 2004 to April 2020 - (# Legal 11791573).xlsx)”

⁸ Individuals in the SOR category were excluded from calculations of the percentages of each race in the inspector jobs at the DOB and FDNY and from all of the analyses in this report.

inspector job titles are predominately White between 2005-2020. Although the work force of the FDNY was predominately White at least in 2018, the inspector job titles are predominately minority between 2005-2020.

Table 3

Fiscal Year	FDNY Inspectors		DOB Inspectors		White % DOB/ White % FDNY
	Minority	White	Minority	White	
2005	60.4%	39.6%	35.6%	64.4%	1.63
2006	61.2%	38.8%	36.8%	63.2%	1.63
2007	61.8%	38.2%	39.7%	60.3%	1.58
2008	63.2%	36.8%	41.5%	58.5%	1.59
2009	64.6%	35.4%	39.2%	60.8%	1.72
2010	65.1%	34.9%	39.4%	60.6%	1.74
2011	66.3%	33.7%	38.1%	61.9%	1.84
2012	67.2%	32.8%	35.2%	64.8%	1.98
2013	65.9%	34.1%	35.2%	64.8%	1.90
2014	68.4%	31.6%	37.1%	62.9%	1.99
2015	68.1%	31.9%	39.1%	60.9%	1.91
2016	67.7%	32.3%	44.1%	55.9%	1.73
2017	69.5%	30.5%	48.1%	51.9%	1.70
2018	70.5%	29.5%	52.2%	47.8%	1.62
2019	71.7%	28.3%	53.3%	46.7%	1.65
2020	74.2%	25.8%	54.3%	45.7%	1.77

Figures 1 and 2 illustrate this reversal in representation between the general workforce in each department and the representation in the inspector job titles using data from fiscal year 2018. In Figure 1 shows a complete reversal of the representation of minority employees at the FDNY.

Figure 1



In Figure 2, there is a large decrease of the representation of minority employees in inspector job titles compared to the general workforce at the DOB.

Figure 2

In addition, in every year between 2005 and 2020 the percentage of white inspectors at DOB has been more than 50% greater than the percentage of white inspectors at FDNY. In some years, the percentage of white inspectors at DOB has been almost twice as high as the percentage of white inspectors at FDNY.

To understand if these disparities in representation are greater than two standard deviations (i.e., statistically significant), the representation of white and minority employees was compared between the DOB and FDNY.⁹ These analyses were conducted separately for the inspector job titles and the associate inspector job titles. For each year, the 2SD test of the difference in proportions (i.e., Pooled Two-Sample Z-Score test) and Fisher's exact test were conducted. The expected values in the table represent the number of white and minority inspectors at the FDNY and DOB if there were no relationship between race and agency. A discussion of these analyses can be found in Appendix E.

In all years, the differences in representation for inspectors are greater than two standard deviations (see Table 4). In every year the inspector titles at the FDNY have been populated predominately by minority employees. In most years the inspector titles at the DOB have been populated predominately by White employees, and even in recent years in which there have been more minority employees than White employees, the percentage of minority employees has been less than at the FDNY. Between 2017-2020 at the FDNY, the average percent of Minority employees with inspector job titles is 74.78% and the average percent of White employees with inspector job titles is 25.23%. At the DOB, the average percent of Minority employees with inspector job titles is 56.38% and the average percent of White employees with inspector job titles is 43.63% between 2017-2020.¹⁰

⁹ In the Workforce Profile Reports, the City of New York defines minority as all groups that are not White, including those in the Some Other Race category. In the analyses included in this report, those in the Some Other Race category were not included.

¹⁰ These averages were computed by taking an unweighted mean of the percentages reported in Table 4.

Table 4

Inspector Job Titles											
Fiscal Year	Agency	Count		Expected		Difference		Percentage		2SD Test	Fishers Exact Test (2-tailed)
		M	W	M	W	M	W	M	W		
2005	FDNY	75	44	63.9	55.1	11.13	-11.13	63.0%	37.0%	3.04	Significant
	DOB	42	57	53.1	45.9	-11.13	11.13	42.4%	57.6%		
2006	FDNY	82	46	70.9	57.1	11.07	-11.07	64.1%	35.9%	2.87	Significant
	DOB	51	61	62.1	49.9	-11.07	11.07	45.5%	54.5%		
2007	FDNY	89	47	74.7	61.3	14.25	-14.25	65.4%	34.6%	3.54	Significant
	DOB	55	71	69.3	56.7	-14.25	14.25	43.7%	56.3%		
2008	FDNY	96	39	78.6	56.4	17.45	-17.45	71.1%	28.9%	4.18	Significant
	DOB	71	81	88.4	63.6	-17.45	17.45	46.7%	53.3%		
2009	FDNY	84	32	65.1	50.9	18.87	-18.87	72.4%	27.6%	4.87	Significant
	DOB	53	75	71.9	56.1	-18.87	18.87	41.4%	58.6%		
2010	FDNY	96	40	78.0	58.0	18.04	-18.04	70.6%	29.4%	4.76	Significant
	DOB	41	62	59.0	44.0	-18.04	18.04	39.8%	60.2%		
2011	FDNY	104	40	85.4	58.6	18.60	-18.60	72.2%	27.8%	5.14	Significant
	DOB	33	54	51.6	35.4	-18.60	18.60	37.9%	62.1%		
2012	FDNY	97	37	71.7	62.3	25.30	-25.30	72.4%	27.6%	6.82	Significant
	DOB	25	69	50.3	43.7	-25.30	25.30	26.6%	73.4%		
2013	FDNY	91	44	68.9	66.1	22.08	-22.08	67.4%	32.6%	5.79	Significant
	DOB	30	72	52.1	49.9	-22.08	22.08	29.4%	70.6%		
2014	FDNY	99	39	75.8	62.2	23.18	-23.18	71.7%	28.3%	5.88	Significant
	DOB	40	75	63.2	51.8	-23.18	23.18	34.8%	65.2%		
2015	FDNY	66	30	51.5	44.5	14.54	-14.54	68.8%	31.3%	3.95	Significant
	DOB	53	73	67.5	58.5	-14.54	14.54	42.1%	57.9%		
2016	FDNY	78	38	64.7	51.3	13.28	-13.28	67.2%	32.8%	3.09	Significant
	DOB	105	107	118.3	93.7	-13.28	13.28	49.5%	50.5%		
2017	FDNY	65	27	52.6	39.4	12.39	-12.39	70.7%	29.3%	3.02	Significant
	DOB	142	128	154.4	115.6	-12.39	12.39	52.6%	47.4%		
2018	FDNY	90	34	76.2	47.8	13.82	-13.82	72.6%	27.4%	3.00	Significant
	DOB	184	138	197.8	124.2	-13.82	13.82	57.1%	42.9%		
2019	FDNY	103	32	85.8	49.2	17.19	-17.19	76.3%	23.7%	3.62	Significant
	DOB	204	144	221.2	126.8	-17.19	17.19	58.6%	41.4%		
2020	FDNY	116	30	91.2	54.8	24.78	-24.78	79.5%	20.5%	4.85	Significant
	DOB	267	200	291.8	175.2	-24.78	24.78	57.2%	42.8%		

In all years, the differences in representation for associate inspectors are greater than two standard deviations (see Table 5) with the associate inspector titles at the DOB populated predominately by White employees and the associate inspector titles at the FDNY populated predominately by Minority employees. Between 2017-2020 at the FDNY, the average percent of Minority employees with associate inspector job titles is 69.23% and the average percent of

White employees with associate inspector job titles is 30.78%. At the DOB, the average percent of Minority employees with associate inspector job titles is 39.55% and the average percent of White employees with associate inspector job titles is 60.45% between 2017-2020.¹¹

Table 5

Associate Inspector Job Titles											
Fiscal Year	Agency	Count		Expected		Difference		Percentage		2SD Test	Fishers Exact Test (2-tailed)
		M	W	M	W	M	W	M	W		
2005	FDNY	59	44	43.9	59.1	15.12	-15.12	57.3%	42.7%	4.11	Significant
	DOB	36	84	51.1	68.9	-15.12	15.12	30.0%	70.0%		
2006	FDNY	60	44	43.7	60.3	16.33	-16.33	57.7%	42.3%	4.38	Significant
	DOB	37	90	53.3	73.7	-16.33	16.33	29.1%	70.9%		
2007	FDNY	60	45	47.0	58.0	13.03	-13.03	57.1%	42.9%	3.29	Significant
	DOB	59	102	72.0	89.0	-13.03	13.03	36.6%	63.4%		
2008	FDNY	62	53	50.4	64.6	11.58	-11.58	53.9%	46.1%	2.85	Significant
	DOB	59	102	70.6	90.4	-11.58	11.58	36.6%	63.4%		
2009	FDNY	86	61	69.7	77.3	16.27	-16.27	58.5%	41.5%	3.70	Significant
	DOB	62	103	78.3	86.7	-16.27	16.27	37.6%	62.4%		
2010	FDNY	87	58	70.7	74.3	16.34	-16.34	60.0%	40.0%	3.69	Significant
	DOB	67	104	83.3	87.7	-16.34	16.34	39.2%	60.8%		
2011	FDNY	91	59	73.8	76.2	17.22	-17.22	60.7%	39.3%	3.93	Significant
	DOB	60	97	77.2	79.8	-17.22	17.22	38.2%	61.8%		
2012	FDNY	100	59	82.8	76.2	17.16	-17.16	62.9%	37.1%	3.91	Significant
	DOB	61	89	78.2	71.8	-17.16	17.16	40.7%	59.3%		
2013	FDNY	112	61	91.0	82.0	21.00	-21.00	64.7%	35.3%	4.66	Significant
	DOB	60	94	81.0	73.0	-21.00	21.00	39.0%	61.0%		
2014	FDNY	111	58	90.2	78.8	20.83	-20.83	65.7%	34.3%	4.74	Significant
	DOB	56	88	76.8	67.2	-20.83	20.83	38.9%	61.1%		
2015	FDNY	137	65	110.2	91.8	26.82	-26.82	67.8%	32.2%	5.81	Significant
	DOB	55	95	81.8	68.2	-26.82	26.82	36.7%	63.3%		
2016	FDNY	136	64	109.3	90.7	26.70	-26.70	68.0%	32.0%	5.86	Significant
	DOB	52	92	78.7	65.3	-26.70	26.70	36.1%	63.9%		
2017	FDNY	142	64	118.0	88.0	24.02	-24.02	68.9%	31.1%	5.43	Significant
	DOB	51	80	75.0	56.0	-24.02	24.02	38.9%	61.1%		
2018	FDNY	139	62	116.2	84.8	22.80	-22.80	69.2%	30.8%	5.34	Significant
	DOB	46	73	68.8	50.2	-22.80	22.80	38.7%	61.3%		
2019	FDNY	135	62	111.9	85.1	23.11	-23.11	68.5%	31.5%	5.22	Significant
	DOB	53	81	76.1	57.9	-23.11	23.11	39.6%	60.4%		
2020	FDNY	137	58	117.7	77.3	19.34	-19.34	70.3%	29.7%	4.86	Significant
	DOB	41	59	60.3	39.7	-19.34	19.34	41.0%	59.0%		

¹¹ These averages were computed by taking an unweighted mean of the percentages reported in Table 5.

Table 6 presents the data separately for White, Black, Asian, and Hispanic employees in inspector job titles. At the DOB, the average percent of White inspectors over 16 years is 55.9% while the average percent of Black inspectors is 23.9%, the average percent of Hispanic inspectors is 11.1%, and the average percent of Asian inspectors is 9.0% over this timeframe.¹² At the FDNY, the average percent of White inspectors over 16 years is 35.9% while the average percent of Black inspectors is 38.3%, the average percent of Hispanic inspectors is 13.3%, and the average percent of Asian inspectors is 12.5% over this timeframe.

Table 6

Fiscal Year	FDNY				DOB			
	Asian	Black or African American	Hispanic	White	Asian	Black or African American	Hispanic	White
2005	12.6%	35.3%	15.1%	37.0%	7.1%	25.3%	10.1%	57.6%
2006	12.5%	38.3%	13.3%	35.9%	8.9%	25.0%	11.6%	54.5%
2007	10.3%	40.4%	14.7%	34.6%	7.1%	23.8%	12.7%	56.3%
2008	8.9%	47.4%	14.8%	28.9%	11.2%	24.3%	11.2%	53.3%
2009	10.3%	47.4%	14.7%	27.6%	10.9%	20.3%	10.2%	58.6%
2010	14.0%	40.4%	16.2%	29.4%	8.7%	22.3%	8.7%	60.2%
2011	15.3%	41.7%	15.3%	27.8%	8.0%	21.8%	8.0%	62.1%
2012	15.7%	44.0%	12.7%	27.6%	5.3%	14.9%	6.4%	73.4%
2013	14.8%	40.7%	11.9%	32.6%	3.9%	19.6%	5.9%	70.6%
2014	17.4%	41.3%	13.0%	28.3%	7.0%	22.6%	5.2%	65.2%
2015	21.9%	36.5%	10.4%	31.3%	8.7%	24.6%	8.7%	57.9%
2016	17.2%	37.1%	12.9%	32.8%	9.0%	25.5%	15.1%	50.5%
2017	18.5%	41.3%	10.9%	29.3%	11.1%	24.8%	16.7%	47.4%
2018	16.1%	45.2%	11.3%	27.4%	12.1%	29.5%	15.5%	42.9%
2019	15.6%	40.7%	20.0%	23.7%	12.4%	30.5%	15.8%	41.4%
2020	19.9%	41.1%	18.5%	20.5%	13.3%	27.6%	16.3%	42.8%

Table 7 presents the data separately for White, Black, Asian, and Hispanic employees in associate inspector job titles. At the DOB, the average percent of White associate inspectors over 16 years is 62.7% while the average percent of Black associate inspectors is 18.7%, the average percent of Hispanic associate inspectors is 12.4%, and the average percent of Asian associate inspectors is 6.2% over this timeframe. At the FDNY, the average percent of White associate inspectors over 16 years is 36.8% while the average percent of Black inspectors is 38.1%, the average percent of Hispanic inspectors is 13.8%, and the average percent of Asian inspectors is 11.3% over this timeframe.

¹² These averages were computed by taking an unweighted mean of the percentages reported in Table 6.

Table 7

Fiscal Year	FDNY				DOB			
	Asian	Black or African American	Hispanic	White	Asian	Black or African American	Hispanic	White
2005	9.7%	35.9%	11.7%	42.7%	3.3%	18.3%	8.3%	70.0%
2006	10.6%	36.5%	10.6%	42.3%	3.1%	17.3%	8.7%	70.9%
2007	9.5%	35.2%	12.4%	42.9%	5.6%	21.7%	9.3%	63.4%
2008	9.6%	31.3%	13.0%	46.1%	5.0%	20.5%	11.2%	63.4%
2009	8.8%	35.4%	14.3%	41.5%	4.8%	20.6%	12.1%	62.4%
2010	9.7%	36.6%	13.8%	40.0%	6.4%	20.5%	12.3%	60.8%
2011	8.7%	37.3%	14.7%	39.3%	7.0%	17.8%	13.4%	61.8%
2012	10.1%	37.1%	15.7%	37.1%	7.3%	18.7%	14.7%	59.3%
2013	12.1%	38.7%	13.9%	35.3%	7.1%	17.5%	14.3%	61.0%
2014	11.8%	39.6%	14.2%	34.3%	6.9%	17.4%	14.6%	61.1%
2015	12.4%	40.6%	14.9%	32.2%	7.3%	16.7%	12.7%	63.3%
2016	12.5%	40.5%	15.0%	32.0%	6.3%	16.7%	13.2%	63.9%
2017	13.6%	41.3%	14.1%	31.1%	6.9%	19.1%	13.0%	61.1%
2018	13.4%	41.8%	13.9%	30.8%	5.9%	19.3%	13.4%	61.3%
2019	14.2%	41.1%	13.2%	31.5%	7.5%	18.7%	13.4%	60.4%
2020	14.4%	40.5%	15.4%	29.7%	8.0%	19.0%	14.0%	59.0%

Whereas Tables 6 and 7 combine all DOB inspector job titles and all DOB associate inspector job titles, Tables 8 and 9 separate them. The underlying percentages are contained in Appendix D. For the FDNY, non-White inspectors averaged over 70% and non-white associate inspectors over 60%. For the DOB, only three inspector job titles and only two associate inspector job titles had an average over 40% for non-White employees and no job title, either inspector or associate, had an average percentage less than 50% of White employees.

Table 8

Race	FDNY	DOB						
	Fire Protection Inspector	Inspector (Construction)	Inspector (Elevators)	Inspector (Hoists & Rigging)	Inspector (Low Pressure Boiler)	Inspector (Multi-Discipline)	Inspector (Plumbing)	Inspector (Boilers)
Asian	15.1%	11.9%	10.2%	3.5%	2.8%	13.1%	0.4%	0.0%
Black or African American	41.2%	25.5%	31.7%	18.9%	3.4%	18.2%	25.6%	50.0%
Hispanic	14.1%	11.6%	7.5%	5.6%	5.2%	0.0%	13.6%	0.0%
White	29.7%	51.0%	50.7%	72.0%	88.6%	68.8%	60.4%	50.0%

Table 9

Race	FDNY	DOB					
	Associate Fire Protection Inspector	Associate Inspector (Construction)	Associate Inspector (Elevators)	Associate Inspector (Hoists & Rigging)	Associate Inspector (Low Pressure Boiler)	Associate Inspector (Plumbing)	Associate Inspector (Boilers)
Asian	11.3%	8.5%	1.3%	0.0%	0.0%	0.0%	0.9%
Black or African American	38.1%	20.4%	16.5%	23.3%	8.9%	8.4%	40.4%
Hispanic	13.8%	13.2%	11.3%	0.0%	0.0%	12.4%	0.0%
White	36.8%	57.9%	70.9%	76.7%	91.1%	79.2%	58.7%

Are the Inspector Jobs at the FDNY and DOB Similar in the Nature of their Work?

Industrial-Organizational (I-O) psychologists and those involved in human resources regularly use the science of job analysis to understand the nature of work. Job analysis is the systematic study of a job in order to describe for example what activities are done on a job and what capabilities are required to perform these activities.¹³ Job analysis is often the first step and foundation for many other activities in I-O psychology and human resource management.¹⁴ That is, I-O psychologists use job analysis for a wide array of activities including generating job descriptions, creating hiring and promotion assessments, designing training programs, and developing performance appraisal and management systems.¹⁵ A key principle from a scientific as well as legal standpoint in building these systems is that they accurately reflect the job, which is information that the job analysis provides.¹⁶ In other words, a job analysis is essential for establishing the job relatedness of any personnel practice.

Pertaining to the current case, job analysis can be used to determine the degree of overlap in attributes between jobs in order to determine if they are similar. That is, jobs can be systematically studied through job analysis to compare if they are similar in nature when it comes to the activities performed on the job and the capabilities required to perform the job. Job analysis information is often used in this way as organizations try to determine the relative worth of various jobs and the appropriate pay rate, a process commonly referred to as job evaluation.¹⁷ To do this effectively, one must have comparable job analysis information on the respective jobs so that a comparison of job attributes can be made to determine if the jobs are similar.

In this case, we were provided recent and mostly complete job analyses for only three of the fifteen job titles that are at issue in this case (2019 inspector – construction¹⁸, 2019 inspector – elevator¹⁹, and 2018 associate fire protection inspectors²⁰). The lack of a job analysis for the majority of the DOB inspector job titles and all but one of the fire protection inspector job titles is very concerning given job analyses' centrality to other critical personnel related tasks performed by the City including the testing that has been conducted for the majority of these jobs in this case between 2005 and 2020. It is unclear how these activities could have been executed

¹³ Morgeson, F. P., Brannick, M. T., & Levine, E. L. (2019). *Job and work analysis: Methods, research, and applications for human resource management*. Sage Publications.

¹⁴ Wilson, M. A. (2012). Methodological decisions in work analysis: A theory of effective work analysis in organizations. In M. Wilson, S. Gibson, & R. Reiter-Palmon (Eds.), *Handbook of work analysis: Methods, systems, applications, and science of work measurement in organizations* (pp. 3-21). New York, NY: Routledge.

¹⁵ Prien, E. P., Goodstein, L. D., Goodstein, J., & Gamble Jr, L. G. (2009). *A practical guide to job analysis*. John Wiley & Sons.

¹⁶ Equal Employment Opportunity Commission, Civil Service Commission, Department of Labor, & Department of Justice. (1978). Adoption by four agencies of Uniform Guidelines on Employee Selection Procedures. *Federal Register*, 43, 38290-38315. 32.

Principles for the Validation and Use of Personnel Selection Procedures (2018). *Industrial and Organizational Psychology: Perspectives on Science and Practice*, 11(Supl 1), 2–97. <https://doi.org/10.1017/iop.2018.195>

¹⁷ Morgeson, F. P., Brannick, M. T., & Levine, E. L. (2019).

¹⁸ Chalmers_SuppProd-000075-Chalmers_SuppProd-000154

¹⁹ Chalmers_SuppProd-000155-Chalmers_SuppProd-000208

²⁰ Chalmers_SuppProd-000014-Chalmers_SuppProd-000048

in a manner consistent with professional practice and legal guidelines without job analyses, and thus we hope they are eventually produced.

Given that the City has not produced job analyses for most of the covered job titles, we started our comparison by examining the Occupational Information Network (O*NET) which is a comprehensive occupational database developed by the United States Department of Labor.²¹ O*NET is widely recognized as the nation's primary source for occupational information that provides job information ranging from worker skills and attributes to labor market data and wages to career guidance information for job seekers and workforce development professionals for nearly 1,000 occupations that reflect the entire U.S. economy.

O*NET is a comprehensive publicly available job analysis system that operates at the national level for analyzing and describing jobs.²² O*NET is viewed as the foremost source of occupation/job information available.²³ O*NET captures the two most common and critical aspects of a typical job analysis, which are the *work requirements* that are commonly referred to as the activities or tasks of the job and the *worker requirements* that are commonly referred to as the knowledge, skills, and abilities (KSAs) of the job.²⁴ While the information in O*NET is generic in that it uses common language to describe work activities/tasks and worker KSAs across a wide array of jobs, it is widely recognized as the chief starting point when beginning a local job analysis and it “contains a significant amount of meaningful and reliable job analytic information for a vast array of jobs”.²⁵

O*NET was developed in the late 1990s to replace the Dictionary of Occupational Titles (DOT). Key reasons the DOT needed replacement was “the lack of information to allow cross-job comparison, which permit classification and determination of similarities and differences across a variety of work roles” and “the numerous difficulties of maintaining the currency of the information in a rapidly changing world of work”.²⁶ In contrast, O*NET created a framework that readily allowed job comparisons like those needed in the current case and O*NET is constantly updated each quarter through ongoing data collection efforts from workers and employers. For example, in their 2019 textbook on job analysis, Morgeson, Brannick, and Levine state that “O*NET provides a standardized set of both abilities and generalized work activities...(that) offer a foundation that might be used for job evaluation” which entails comparing two jobs to determine if they are similar.²⁷ In summary, O*NET is very useful for

²¹ Morgeson, F. P., & Dierdorff, E. C. (2011). Work analysis: From technique to theory. In S. Zedeck (Ed.), *APA handbook of industrial and organizational psychology* (Vol. 2, pp. 3-41). Washington, District of Columbia: APA.

²² Dye, D., & Silver, M. (1999). The origins of O*NET. In N.G. Peterson, M.D. Mumford, W.C. Borman, P.R. Jeanneret, & E.A. Fleishman (Eds.), *An occupational information system for the 21st century: The development of the O*NET* (pp. 9-20). Washington, DC: American Psychological Association.

²³ Gatewood, R., Feild, H.S., & Barrick, M. (2015). *Human Resource Selection (8th edition)*. New York: Cengage Learning.

²⁴ McCormick, E. J. (1979). *Job analysis: Methods and applications*. New York: American Management Association.

²⁵ Jeanneret, P. R., & Strong, M. H. (2003). Linking O*NET job analysis information to job requirement predictors: An O*NET application. *Personnel Psychology*, 56(2), p. 465-492.

²⁶ Morgeson, F. P., & Dierdorff, E. C. (2011).

²⁷ Morgeson, F. P., Brannick, M. T., & Levine, E. L. (2019).

comparing jobs on general attributes for purposes such as determining compensation. Thus, it is a reasonable starting point for understanding the similarity of these inspection job titles.

O*NET is arranged around a content model that organizes a wide variety of information that comprises the world of work.²⁸ The content model includes worker requirements such as the basic knowledge, skills, and abilities (KSAs) required to perform the job and work requirements such as the key general work activities performed on the job. Of central importance to this case, the O*NET content model provides a common language to describe the world of work that “is essential for cross-occupation comparisons that seek to identify similarities and differences between occupations”.²⁹ That is, O*NET is ideal for comparing jobs on multiple attributes because it provides based on the content model a standardized set of both capabilities and generalized work activities³⁰.

For this case, we were asked to examine whether the inspector job titles in the FDNY are similar to the inspector job titles in the DOB in terms of the nature of the work performed. Since complete, recent, and comparable job analysis information was not provided by the city, we initially compared these jobs using O*NET before attempting to compare the job using the limited job analysis data and less directly comparable information such as Notice of Examinations provided by the City.

Within O*NET, we identified the Fire Inspectors and Investigators job title³¹ as the relevant occupational title for the job inspection titles for the FDNY (Fire Protection Inspector; Associate Fire Protection Inspector). O*NET lists a number of job titles associated with this role and those include Fire Prevention Inspector, which fits the central inspector title for the FDNY in this case.

We also identified within O*NET the Construction and Building Inspectors as a key relevant occupational title³² for the job inspection titles for the DOB (Construction Inspector, Elevator Inspector, Boiler Inspector, Low Pressure Boiler Inspector, Hoist and Rigging Inspector, Plumbing Inspector, Multi-Discipline Inspector, Associate Construction Inspector, Associate Elevator Inspector, Associate Boiler Inspector, Associate Low Pressure Boiler Inspector, Associate Hoist and Rigging Inspector, and Associate Plumbing Inspector). O*NET lists a number of job titles associated with this role and those include Building Inspector, Construction Inspector, Elevator Inspector, Plumbing Inspector, and Combination Building Inspector which fit with many of the central inspector titles for the DOB in this case.

In comparing the O*NET Fire Inspectors and Investigators job title and the O*NET Construction and Building Inspectors job title, we find strong evidence that the jobs are similar. To begin with, O*NET views these inspector jobs as similar in that it references each job as a related occupation. That is, O*NET lists the Fire Inspectors and Investigators job as a directly related occupation to the Construction and Building Inspectors job and vice-versa. Therefore, in the

²⁸ Morgeson, F. P., & Dierdorff, E. C. (2011).

²⁹ Morgeson, F. P., & Dierdorff, E. C. (2011).

³⁰ Morgeson, F. P., Brannick, M. T., & Levine, E. L. (2019).

³¹ <https://www.onetonline.org/link/summary/33-2021.00>

³² <https://www.onetonline.org/link/summary/47-4011.00>

view of the Department of Labor and the O*NET database, they are grouped together as similar occupations.

More specifically, an examination of the O*NET data allows us to look closer at the degree of similarity between these occupations. Our focus in doing this is on the general work activities of the jobs and on the knowledge, skills, and abilities (KSAs) of the jobs. General work activities are a part of job analysis that delineates the key activities performed on the job but at a level of abstraction that allows comparison across occupations. Focusing on tasks performed on the job is often too detailed which hinders cross occupational comparisons but generalized work activities such as those in O*NET allows such comparisons.³³ Identifying the knowledge, skills, and abilities (KSAs) required to perform the work activities of the job is another central part of job analysis. Comparing the KSAs for these occupations using the O*NET data is another effective way to demonstrate that the jobs are similar. In summary, the comparison of both of these attributes of the job informs how similar is the work being done (i.e., general work activities) and how similar are the capabilities (i.e., KSAs) being used to complete that work.

We defined similarity using what is called a similarity index (SI).³⁴ This index quantifies the overlap in work activities, tasks, knowledge, skills, or abilities between two jobs. This index has been used in a variety of contexts when a determination of the overlap in the content of two jobs is needed (e.g., test transportability). The maximum value of the index is 1.0 which represents complete overlap between the jobs. Values above 0.50 indicate that the jobs are more similar than dissimilar. Values above 0.75 indicate that the jobs should be considered similar.³⁵ The index is computed as follows:

$$SI = \frac{N_c}{\sqrt{N_1 * N_2}}$$

Where N_c is the number of work activities, tasks, knowledge, skills or abilities that are common between the two jobs. N_1 is the number of critical work activities, tasks, knowledge, skills or abilities in job 1. N_2 is the number of critical work activities, tasks, knowledge, skills or abilities in job 2. Thus, values over 0.75 will indicate that the DOB and FDNY inspector jobs are similar.

Does O*NET provide support that Fire and Building inspector jobs are similar?

To begin, we used O*NET data to compare the jobs to determine if they involve similar work activities. In accordance with O*NET, we focused on work activities rated as important (which is 50 or above on the standardized importance scale that ranges from 0 to 100). As can be seen in Table 10, 34 work activities were identified as important for the Fire Inspectors and Investigators job and 27 work activities were identified as important for the Construction and

³³ Morgeson, F. P., Brannick, M. T., & Levine, E. L. (2019).

³⁴ Gibson, W. M., & Caplinger, J. A. (2007). Transportation of validation results. In S. M. McPhail (Ed.), *Alternative validation strategies: Developing new and leveraging existing validity evidence*. (pp. 29–81). Hoboken, NJ: Wiley.

³⁵ Gibson, W. M., & Caplinger, J. A. (2007).

Building Inspectors job. In examining the overlap, all 27 work activities identified as important for the Construction and Building Inspectors job are also identified as important for the Fire Inspectors and Investigators job. This indicates that Fire Inspectors and Investigators do 100% of the work activities indicated as important for the Construction and Building Inspectors job. The similarity index value is 0.8911 indicating that the jobs are similar in the work activities they perform. This value clearly exceeds the 0.75 threshold and therefore the jobs are seen as similar on the work activities. Therefore, in terms of the general nature of the activities performed, this finding provides strong supportive evidence that indicates similarity between the FDNY and DOB inspector jobs.

Table 10

Work Activity	Work Activity Description	Fire Inspector and Investigators		Construction and Building Inspectors	
		Y/N	Importance	Y/N	Importance
Analyzing Data or Information	Identifying the underlying principles, reasons, or facts of information by breaking down information or data into separate parts.	✓	68	✓	58
Coaching and Developing Others	Identifying the developmental needs of others and coaching, mentoring, or otherwise helping others to improve their knowledge or skills.	✓	59	✓	52
Communicating with Persons Outside Organizations	Communicating with people outside the organization, representing the organization to customers, the public, government, and other external sources. This information can be exchanged in person, in writing, or by telephone or e-mail.	✓	91	✓	70
Communicating with Supervisors, Peers, or Subordinates	Providing information to supervisors, co-workers, and subordinates by telephone, in written form, e-mail, or in person.	✓	85	✓	75
Documenting/Recording Information	Entering, transcribing, recording, storing, or maintaining information in written or electronic/magnetic form.	✓	91	✓	62
Establishing and Maintaining Interpersonal Relationships	Developing constructive and cooperative working relationships with others, and maintaining them over time.	✓	80	✓	63
Evaluating Information to Determine	Using relevant information and individual judgment to determine whether events or processes comply with laws, regulations, or standards.	✓	91	✓	75

Work Activity	Work Activity Description	Fire Inspector and Investigators		Construction and Building Inspectors	
		Y/N	Importance	Y/N	Importance
Compliance with Standards					
Getting Information	Observing, receiving, and otherwise obtaining information from all relevant sources.	✓	90	✓	77
Guiding, Directing, and Motivating Subordinates	Providing guidance and direction to subordinates, including setting performance standards and monitoring performance.	✓	52	✓	50
Identifying Objects, Actions, and Events	Identifying information by categorizing, estimating, recognizing differences or similarities, and detecting changes in circumstances or events.	✓	86	✓	68
Inspecting Equipment, Structures, or Material	Inspecting equipment, structures, or materials to identify the cause of errors or other problems or defects.	✓	83	✓	78
Interacting With Computers	Using computers and computer systems (including hardware and software) to program, write software, set up functions, enter data, or process information.	✓	72	✓	61
Interpreting the Meaning of Information for Others	Translating or explaining what information means and how it can be used.	✓	72	✓	56
Judging the Qualities of Things, Services, or People	Assessing the value, importance, or quality of things or people.	✓	67	✓	52
Making Decisions and Solving Problems	Analyzing information and evaluating results to choose the best solution and solve problems.	✓	83	✓	66
Monitor Processes, Materials, or Surroundings	Monitoring and reviewing information from materials, events, or the environment, to detect or assess problems.	✓	72	✓	52
Operating Vehicles, Mechanized	Running, maneuvering, navigating, or driving vehicles or mechanized equipment, such as forklifts, passenger vehicles, aircraft, or water craft.	✓	64	✓	57

Work Activity	Work Activity Description	Fire Inspector and Investigators		Construction and Building Inspectors	
		Y/N	Importance	Y/N	Importance
Devices, or Equipment					
Organizing, Planning, and Prioritizing Work	Developing specific goals and plans to prioritize, organize, and accomplish your work.	✓	74	✓	63
Performing Administrative Activities	Performing day-to-day administrative tasks such as maintaining information files and processing paperwork.	✓	59	✓	52
Performing for or Working Directly with the Public	Performing for people or dealing directly with the public. This includes serving customers in restaurants and stores, and receiving clients or guests.	✓	92	✓	59
Performing General Physical Activities	Performing physical activities that require considerable use of your arms and legs and moving your whole body, such as climbing, lifting, balancing, walking, stooping, and handling of materials.	✓	75	✓	57
Processing Information	Compiling, coding, categorizing, calculating, tabulating, auditing, or verifying information or data.	✓	70	✓	63
Provide Consultation and Advice to Others	Providing guidance and expert advice to management or other groups on technical, systems-, or process-related topics.	✓	62	✓	50
Resolving Conflicts and Negotiating with Others	Handling complaints, settling disputes, and resolving grievances and conflicts, or otherwise negotiating with others.	✓	61	✓	61
Scheduling Work and Activities	Scheduling events, programs, and activities, as well as the work of others.	✓	70	✓	50
Training and Teaching Others	Identifying the educational needs of others, developing formal educational or training programs or classes, and teaching or instructing others.	✓	61	✓	52
Updating and Using Relevant Knowledge	Keeping up-to-date technically and applying new knowledge to your job.	✓	90	✓	68

Work Activity	Work Activity Description	Fire Inspector and Investigators		Construction and Building Inspectors	
		Y/N	Importance	Y/N	Importance
Assisting and Caring for Others	Providing personal assistance, medical attention, emotional support, or other personal care to others such as coworkers, customers, or patients.	✓	69		
Coordinating the Work and Activities of Others	Getting members of a group to work together to accomplish tasks.	✓	65		
Developing and Building Teams	Encouraging and building mutual trust, respect, and cooperation among team members.	✓	66		
Developing Objectives and Strategies	Establishing long-range objectives and specifying the strategies and actions to achieve them.	✓	60		
Estimating the Quantifiable Characteristics of Products, Events, or Information	Estimating sizes, distances, and quantities; or determining time, costs, resources, or materials needed to perform a work activity.	✓	62		
Handling and Moving Objects	Using hands and arms in handling, installing, positioning, and moving materials, and manipulating things.	✓	64		
Thinking Creatively	Developing, designing, or creating new applications, ideas, relationships, systems, or products, including artistic contributions.	✓	57		

We further compared the jobs to determine if they involve the use of similar capabilities by workers in terms of knowledge, skills, and abilities (KSAs). We first compared the jobs in terms of the knowledge areas required to perform the job. In accordance with O*NET, we focused on knowledge areas rated as important (which is 50 or above on the standardized importance scale that ranges from 0 to 100). As can be seen in Table 11, both the Fire Inspectors and Investigators job and the Construction and Building Inspectors job indicate 13 important knowledge areas. In examining the overlap, 10 out of the 13 knowledge areas identified as important for the Construction and Building Inspectors job were also identified as important for the Fire Inspectors and Investigators job. The similarity index value is 0.7692 indicating that the jobs are similar in the required knowledge areas. This value exceeds the 0.75 threshold and therefore the jobs are seen as similar on the required knowledge areas. This overlap in knowledge provides additional support for the similarity of the FDNY and DOB inspector jobs.

Table 11

Knowledge	Knowledge Description	Fire Inspector and Investigators		Construction and Building Inspectors	
		Y/N	Importance	Y/N	Importance
Administration and Management	Knowledge of business and management principles involved in strategic planning, resource allocation, human resources modeling, leadership technique, production methods, and coordination of people and resources.	✓	56	✓	59
Building and Construction	Knowledge of materials, methods, and the tools involved in the construction or repair of houses, buildings, or other structures such as highways and roads.	✓	83	✓	82
Computers and Electronics	Knowledge of circuit boards, processors, chips, electronic equipment, and computer hardware and software, including applications and programming.	✓	50	✓	53
Customer and Personal Service	Knowledge of principles and processes for providing customer and personal services. This includes customer needs assessment, meeting quality standards for services, and evaluation of customer satisfaction.	✓	82	✓	75
Education and Training	Knowledge of principles and methods for curriculum and training design, teaching and instruction for individuals and groups, and the measurement of training effects.	✓	75	✓	52
English Language	Knowledge of the structure and content of the English language including the meaning and spelling of words, rules of composition, and grammar.	✓	70	✓	60
Law and Government	Knowledge of laws, legal codes, court procedures, precedents, government regulations, executive orders, agency rules, and the democratic political process.	✓	81	✓	57
Mathematics	Knowledge of arithmetic, algebra, geometry, calculus, statistics, and their applications.	✓	50	✓	68
Mechanical	Knowledge of machines and tools, including their designs, uses, repair, and maintenance.	✓	55	✓	58
Public Safety and Security	Knowledge of relevant equipment, policies, procedures, and strategies to promote effective local, state, or national security operations for the protection of people, data, property, and institutions.	✓	91	✓	60

Knowledge	Knowledge Description	Fire Inspector and Investigators		Construction and Building Inspectors	
		Y/N	Importance	Y/N	Importance
Chemistry	Knowledge of the chemical composition, structure, and properties of substances and of the chemical processes and transformations that they undergo. This includes uses of chemicals and their interactions, danger signs, production techniques, and disposal methods.	✓	50		
Personnel and Human Resources	Knowledge of principles and procedures for personnel recruitment, selection, training, compensation and benefits, labor relations and negotiation, and personnel information systems.	✓	52		
Psychology	Knowledge of human behavior and performance; individual differences in ability, personality, and interests; learning and motivation; psychological research methods; and the assessment and treatment of behavioral and affective disorders.	✓	50		
Clerical	Knowledge of administrative and clerical procedures and systems such as word processing, managing files and records, stenography and transcription, designing forms, and other office procedures and terminology.			✓	51
Design	Knowledge of design techniques, tools, and principles involved in production of precision technical plans, blueprints, drawings, and models.			✓	63
Engineering and Technology	Knowledge of the practical application of engineering science and technology. This includes applying principles, techniques, procedures, and equipment to the design and production of various goods and services.			✓	64

With regard to skills, we similarly focused on skills rated as important (which is 50 or above on the standardized importance scale that ranges from 0 to 100) in accordance with O*NET. As can be seen in Table 12, the Fire Inspectors and Investigators job indicate 14 important skills and the Construction and Building Inspectors job indicate 20 important skills. In examining the overlap, 13 of the 20 skills identified as important for the Construction and Building Inspectors job were also identified as important for the Fire Inspectors and Investigators job. The similarity index value is 0.7769 indicating that the jobs are similar in the required skills. This value exceeds the 0.75 threshold and therefore the jobs are seen as similar on the required skills. This overlap in skills provides additional support for the similarity of the FDNY and DOB inspector jobs.

Table 12

Skill	Skill Description	Fire Inspector and Investigators		Construction and Building Inspectors	
		Y/N	Importance	Y/N	Importance
Active Learning	Understanding the implications of new information for both current and future problem-solving and decision-making.	✓	55	✓	53
Active Listening	Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times.	✓	75	✓	72
Complex Problem Solving	Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions.	✓	64	✓	66
Coordination	Adjusting actions in relation to others' actions.	✓	55	✓	50
Critical Thinking	Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.	✓	74	✓	69
Instructing	Teaching others how to do something.	✓	52	✓	50
Judgment and Decision Making	Considering the relative costs and benefits of potential actions to choose the most appropriate one.	✓	67	✓	56
Monitoring	Monitoring/Assessing performance of yourself, other individuals, or organizations to make improvements or take corrective action.	✓	56	✓	50
Reading Comprehension	Understanding written sentences and paragraphs in work related documents.	✓	63	✓	72
Social Perceptiveness	Being aware of others' reactions and understanding why they react as they do.	✓	53	✓	50
Speaking	Talking to others to convey information effectively.	✓	72	✓	72
Time Management	Managing one's own time and the time of others.	✓	53	✓	53
Writing	Communicating effectively in writing as appropriate for the needs of the audience.	✓	64	✓	50
Science	Using scientific rules and methods to solve problems.	✓	50		

Skill	Skill Description	Fire Inspector and Investigators		Construction and Building Inspectors	
		Y/N	Importance	Y/N	Importance
Learning Strategies	Selecting and using training/instructional methods and procedures appropriate for the situation when learning or teaching new things.			✓	50
Mathematics	Using mathematics to solve problems.			✓	50
Negotiation	Bringing others together and trying to reconcile differences.			✓	50
Persuasion	Persuading others to change their minds or behavior.			✓	50
Quality Control Analysis	Conducting tests and inspections of products, services, or processes to evaluate quality or performance.			✓	50
Systems Analysis	Determining how a system should work and how changes in conditions, operations, and the environment will affect outcomes.			✓	50
Systems Evaluation	Identifying measures or indicators of system performance and the actions needed to improve or correct performance, relative to the goals of the system.			✓	53

With regard to abilities, we similarly focused on abilities rated as important (which is 50 or above on the standardized importance scale that ranges from 0 to 100) in accordance with O*NET. As can be seen in Table 13, the Fire Inspectors and Investigators job indicate 21 important abilities and the Construction and Building Inspectors job indicate 18 important abilities. In examining the overlap, all 18 abilities identified as important for the Construction and Building Inspectors job are also identified as important for the Fire Inspectors and Investigators job. This indicates that 100% of the abilities indicated as important for the Construction and Building Inspectors job are also important for the Fire Inspectors and Investigators job. The similarity index value is 0.9258 indicating that the jobs are similar in the required abilities. This value exceeds the 0.75 threshold and therefore the jobs are seen as similar on the required abilities. This overlap in abilities provides strong additional support for the similarity of the FDNY and DOB inspector jobs.

Table 13

Ability	Ability Description	Fire Inspector and Investigators		Construction and Building Inspectors	
		Y/N	Importance	Y/N	Importance
Category Flexibility	The ability to generate or use different sets of rules for combining or grouping things in different ways.	✓	64	✓	56
Deductive Reasoning	The ability to apply general rules to specific problems to produce answers that make sense.	✓	72	✓	72
Far Vision	The ability to see details at a distance.	✓	67	✓	56
Flexibility of Closure	The ability to identify or detect a known pattern (a figure, object, word, or sound) that is hidden in other distracting material.	✓	75	✓	56
Inductive Reasoning	The ability to combine pieces of information to form general rules or conclusions (includes finding a relationship among seemingly unrelated events).	✓	75	✓	75
Information Ordering	The ability to arrange things or actions in a certain order or pattern according to a specific rule or set of rules (e.g., patterns of numbers, letters, words, pictures, mathematical operations).	✓	69	✓	56
Near Vision	The ability to see details at close range (within a few feet of the observer).	✓	74	✓	69
Oral Comprehension	The ability to listen to and understand information and ideas presented through spoken words and sentences.	✓	74	✓	72
Oral Expression	The ability to communicate information and ideas in speaking so others will understand.	✓	75	✓	72
Perceptual Speed	The ability to quickly and accurately compare similarities and differences among sets of letters, numbers, objects, pictures, or patterns. The things to be compared may be presented at the same time or one after the other. This ability also includes comparing a presented object with a remembered object.	✓	61	✓	53
Problem Sensitivity	The ability to tell when something is wrong or is likely to go wrong. It does not involve solving the problem, only recognizing there is a problem.	✓	77	✓	78
Selective Attention	The ability to concentrate on a task over a period of time without being distracted.	✓	53	✓	50

Ability	Ability Description	Fire Inspector and Investigators		Construction and Building Inspectors	
		Y/N	Importance	Y/N	Importance
Speech Clarity	The ability to speak clearly so others can understand you.	✓	67	✓	56
Speech Recognition	The ability to identify and understand the speech of another person.	✓	61	✓	53
Visual Color Discrimination	The ability to match or detect differences between colors, including shades of color and brightness.	✓	56	✓	53
Visualization	The ability to imagine how something will look after it is moved around or when its parts are moved or rearranged.	✓	53	✓	50
Written Comprehension	The ability to read and understand information and ideas presented in writing.	✓	69	✓	69
Written Expression	The ability to communicate information and ideas in writing so others will understand.	✓	61	✓	66
Fluency of Ideas	The ability to come up with a number of ideas about a topic (the number of ideas is important, not their quality, correctness, or creativity).	✓	53		
Originality	The ability to come up with unusual or clever ideas about a given topic or situation, or to develop creative ways to solve a problem.	✓	50		
Speed of Closure	The ability to quickly make sense of, combine, and organize information into meaningful patterns.	✓	52		

In addition to comparing the FDNY and DOB inspector jobs using the work activities and the knowledge, skills, and abilities (KSAs), O*NET also provides further evidence of the similarity of these jobs by indicating that they are in the same job zone. A job zone is an analysis by O*NET that groups occupations that are similar in terms of: (1) how much education people need to do the work, (2) how much related experience people need to do the work, and (3) how much on-the-job training people need to do the work. O*NET places the Fire Inspectors and Investigators job and the Construction and Building Inspectors job in the same job zone. Both jobs are described as Job Zone Three which indicates “Medium Preparation Needed”. Details regarding the characteristics of occupations placed in Job Zone Three are provided in Table 14.

Table 14

Component	Description
Title	Job Zone Three: Medium Preparation Needed
Education	Most occupations in this zone require training in vocational schools, related on-the-job experience, or an associate's degree.
Related Experience	Previous work-related skill, knowledge, or experience is required for these occupations. For example, an electrician must have completed three or four years of apprenticeship or several years of vocational training, and often must have passed a licensing exam, in order to perform the job.
Job Training	Employees in these occupations usually need one or two years of training involving both on-the-job experience and informal training with experienced workers. A recognized apprenticeship program may be associated with these occupations.
Job Zone Examples	These occupations usually involve using communication and organizational skills to coordinate, supervise, manage, or train others to accomplish goals. Examples include hydroelectric production managers, travel guides, electricians, agricultural technicians, barbers, court reporters, and medical assistants.
Specific Vocational Preparation (SVP) Range	(6.0 to < 7.0) Key: 1 Short demonstration only 2 Anything beyond short demonstration up to and including 1 month 3 Over 1 month up to and including 3 months 4 Over 3 months up to and including 6 months 5 Over 6 months up to and including 1 year 6 Over 1 year up to and including 2 years 7 Over 2 years up to and including 4 years 8 Over 4 years up to and including 10 years 9 Over 10 years

Based on the pattern of evidence in O*NET and the similarity index, there is a great deal of support that the FDNY and DOB inspector jobs are similar. According to O*NET, the jobs overlap substantially in terms of work activities and knowledge, skills, and abilities (KSAs) that are required. In terms of the education, experience, and on-the-job training needed, they are also viewed as similar. In addition, O*NET also references each job as a related occupation; that is, Fire Inspectors and Investigators is listed as a related occupation for Construction and Building Inspectors and vice-versa. In summary, analysis of the O*NET data provides convincing support that the FDNY and DOB inspectors jobs are similar.

Does City information provide support that the FDNY and DOB inspector jobs similar?

While we focused on the O*NET data because comparable job analysis data was not provided by the City in this case, we did review the available information for the FDNY and DOB inspector jobs in order to determine if the jobs described in this information appeared to be similar. We note that while basic job analysis information on these specific job titles from City would allow for a more direct comparison between these FDNY and DOB inspector jobs (as previously noted we were not provided with this information by the City which is troubling given its centrality to other critical personnel related tasks performed by the City), we did decide to compare the jobs using the information available even if that is less than an ideal approach.

To do this, we used the job analysis conducted for the DOB Building Inspector Construction job that was recently provided as a starting point and subsequently compared the findings to available information on the FDNY Fire Protection Inspector job. Given that construction building inspectors have generally made up 60%-70% of all DOB inspectors in most years between 2005 and 2020, this is a reasonable job title to use for this comparison. In particular, we used the DOB Building Inspector Construction job analysis to pinpoint the critical tasks performed by building inspectors and compared these tasks to those described in ancillary materials regarding the FDNY Fire Protection Inspector job. The focus of these ancillary materials was the NOE for the target FPI job because it provides a general description of what tasks are involved in performing the FPI job. Additionally, for tasks not included in the FPI NOE, we reviewed training materials, performance appraisal documents, and other produced documents to determine if the tasks were likely part of the FPI job. There was insufficient information in the ancillary materials to compare the jobs on the knowledge, skills, and abilities.

As can be seen in Table 15, there is substantial overlap in the critical tasks identified for the DOB Building Inspector Construction job and the general description of work performed in the FDNY Fire Protection Inspector job. For the 32 critical tasks identified for the DOB Building Inspector Construction job, a minimum of 29 are important for the FDNY Fire Protection Inspector job. This means that over 90% of the critical tasks performed by the DOB Construction Building Inspectors are also performed by the FDNY Fire Protection Inspectors. The similarity index value is 0.9520 indicating that the jobs are similar in the tasks performed. Given that we do not have a complete task list for the FPI job, our similarity index is an estimate. However, a complete task list is unlikely to change conclusions about the similarity between the jobs. The lack of a complete job analysis for the majority of the DOB inspector job titles and for one of the two fire protection inspector job titles is very concerning given job analyses' centrality to other critical personnel related tasks performed by the City including the testing that has been conducted for the majority of these jobs in this case between 2005 and 2020. It is unclear how these activities could have been. Given the information we have seen to date, it is unlikely that more than 29 unique tasks would be added to the FPI job if we had a complete task list.

Also, it is important to note that for the three critical tasks not identified as overlapping in the table, this doesn't mean they are not important for the FDNY Fire Protection Inspector role but only that we didn't have sufficient specific information needed to definitely document whether they are important or not. In fact, some evidence suggests that at least two of the three are part

of the FPI job for at least some FPIs including using digital cameras to document evidence and conducting post fire investigations to enforce rules and regulations. This would mean 31 of the 32 critical tasks for the DOB Building Inspector Construction job are also identified as important for the FDNY Fire Protection Inspector job. The resulting overlap of these DOB and FDNY inspector jobs would be close to 100%. In summary, this analysis provides support that the FDNY and DOB inspector jobs are similar. We would also like to note that if additional data on the FDNY and DOB inspector jobs is made available by the city, then a further examination of the similarity of the jobs could be conducted.

Table 15

DOB Building Inspector (Construction)	FDNY Fire Protection Inspector	
Critical Tasks from the City's 2019 Job Analysis	Part of the FPI Tasks and Activities?	Source of Documentation
Visits work locations and inspects all structures under construction, alteration or repair to ensure conformance with all applicable codes, laws, ordinances, rules, or approved plans and specifications.	Yes - Conduct inspections to detect violations of laws, rules, and regulations that are intended to reduce or eliminate fire hazards or assist in extinguishing fires.	Notice of Examination, Fire Protection Inspector, April 8, 2020
Assesses site conditions to check for conformance to codes, rules, laws, plans, or specifications.	Yes - Conduct inspections to detect violations of laws, rules, and regulations that are intended to reduce or eliminate fire hazards or assist in extinguishing fires.	Notice of Examination, Fire Protection Inspector, April 8, 2020
Performs sweeps of work sites and structures to check for conformance to codes, rules, laws, plans, or specifications.	Yes - Conduct inspections to detect violations of laws, rules, and regulations that are intended to reduce or eliminate fire hazards or assist in extinguishing fires.	Notice of Examination, Fire Protection Inspector, April 8, 2020
Investigates complaints of building code violations to identify whether a violation has occurred.	Yes - Receives complaints from the public and governmental agencies with regard to possible fire hazards.	Notice of Examination, Fire Protection Inspector, April 8, 2020
Investigates accidents and incidents (e.g., person getting injured, building or equipment collapse, vehicle colliding with structure) to determine whether the incident was the result of a violation or to enforce rules and regulations.	Unclear at this point - The post fire inspection reports suggest that at least some FPIs may perform investigations to enforce rules and regulations after a fire has occurred. Additional documentation will be needed to offer a definitive opinion.	Notice of Examination, Fire Protection Inspector, April 8, 2020. PLFPI-DCHA000058
Inspects buildings damaged by fires or accidents to identify any unsafe conditions.	Yes - Observe and inspect the surroundings of structures for hazardous conditions.	Notice of Examination, Fire Protection Inspector, April 8, 2020
Inspects buildings prior to or after being moved to identify any unsafe conditions.	Yes - Observe and inspect the surroundings of structures for hazardous conditions.	Notice of Examination, Fire Protection Inspector, April 8, 2020
Inspects job sites to ensure compliance with zoning laws.	Yes - Conduct inspections to detect violations of laws, rules, and regulations that are intended to reduce or eliminate fire hazards or assist in extinguishing fires.	Notice of Examination, Fire Protection Inspector, April 8, 2020

DOB Building Inspector (Construction)	FDNY Fire Protection Inspector	
Critical Tasks from the City's 2019 Job Analysis	Part of the FPI Tasks and Activities?	Source of Documentation
Verifies that construction personnel are carrying the correct licenses.	Yes - Check owner's Certificate of Fitness.	Notice of Examination, Fire Protection Inspector, April 8, 2020
Inspects demolition of structures (pre-demo, during, and post-demo) to identify any unsafe conditions.	Yes - Observe and inspect the surroundings of structures for hazardous conditions.	Notice of Examination, Fire Protection Inspector, April 8, 2020
Inspects places of public assembly (e.g., theaters, hotels, hospitals, halls, amusement park structures) to identify any unsafe conditions.	Yes - Observe and inspect the surroundings of structures for hazardous conditions.	Notice of Examination, Fire Protection Inspector, April 8, 2020
Measures dimensions to determine whether level, alignment, or elevation of structures or fixtures are in compliance with building plans and codes.	Yes - Conduct inspections to detect violations of laws, rules, and regulations that are intended to reduce or eliminate fire hazards or assist in extinguishing fires.	Notice of Examination, Fire Protection Inspector, April 8, 2020
Takes pictures during inspection using a digital camera, smartphone, tablet, or other photographic device to document conditions that constitute nonconformance with codes, laws, ordinances, rules, or approved plans and specifications.	Most likely yes – Additional documentation is need for a definitive opinion, but at least some FPIs use a digital camera as documented in the post fire report PLFPI-DCHA000058. Additionally, the FDNY was looking to implement mobile technology for field inspections which would have this capacity. For example, "... significant efficiencies will be achieved by leveraging mobile technology to conduct field-based inspections throughout the City of New York." ³⁶	PLFPI-DCHA000058 CHALMERS_FPI_LIT-00040351
Checks all material used as to quality, grade marks, and identifying marks.	Yes - Conduct inspections to detect violations of laws, rules, and regulations that are intended to reduce or eliminate fire hazards or assist in extinguishing fires.	Notice of Examination, Fire Protection Inspector, April 8, 2020
Issues a Criminal Court summons when a violation has not been corrected by the specified deadline.	Yes - Complete and issue violation forms, orders and/or summonses.	Notice of Examination, Fire Protection Inspector, April 8, 2020
Issues violations for unsafe conditions found during inspection or investigation.	Yes - Complete and issue violation forms, orders and/or summonses.	Notice of Examination, Fire Protection Inspector, April 8, 2020
Issues stop work orders.	Yes - Complete and issue violation forms, orders and/or summonses.	Notice of Examination, Fire Protection Inspector, April 8, 2020
Verifies that required plans, blueprints, specifications and drawings have been filed with the Department of Buildings and appropriate permits have been obtained to begin work.	Yes – This task is described in the 2020 FPI NOE "Written Comprehension: understanding written sentences and paragraphs. Example: A Fire Protection Inspector may use this ability when reading building plans, certificates of	Notice of Examination, Fire Protection Inspector, April 8, 2020

³⁶ Pg. 4 of CHALMERS_FPI_LIT-00040351

DOB Building Inspector (Construction)	FDNY Fire Protection Inspector	
Critical Tasks from the City's 2019 Job Analysis	Part of the FPI Tasks and Activities?	Source of Documentation
	fitness, warning signs, instructional materials and standard forms.”	
Wears or uses required safety gear and personal protective equipment to ensure work activities are performed safely.	Yes – The FDNY OSHA describes the types of personal protective equipment need to perform fire protection inspector tasks. The basic fire protection inspector training includes a section on “OSHA Training - Ladder safety and Safety Harness”. There is also a NYS notice of required personal protective equipment not being provided.	Fire Department New York City OSHA Unit Job Hazard Assessment for Fire Protection Inspectors – 2016, Basic Course for Fire Protection Inspector Course outline, and CHALMERS_FPI_LIT-00026601.pdf
Advises recipients regarding the nature of and reason for a violation and necessary next steps (e.g., to cure the violation, to remain in conformance in the future).	Yes – This is required by Local Law 18 of 2010 – Business Owner’s Bill of Rights and is included in the standardized customer service training curriculum for inspectors.	Training for inspectors participant guide January 2020 ³⁷
Testifies in court regarding inspection procedures and findings in order to support the issuance of a violation.	Yes - Testify in court.	Notice of Examination, Fire Protection Inspector, April 8, 2020
Explains building codes and regulations (e.g., to property owners, members of the public, licensed professionals, contractors) in order to ensure proper understanding of applicable rules and regulations.	Yes – This is required by Local Law 18 of 2010 – Business Owner’s Bill of Rights and is included in the standardized customer service training curriculum for inspectors.	Training for inspectors participant guide January 2020 ³⁸
Communicates orally and in writing with supervisor regarding inspection procedures, findings, and questions.	Yes - Fill out appropriate forms as required.	Notice of Examination, Fire Protection Inspector, April 8, 2020
Acts as lead Inspector in training new hires in the performance of inspection procedures.	Unclear at this point - Additional documentation will be needed to offer a definitive opinion.	
Attends mandatory training to ensure job knowledge remains up to date.	Yes - Maintains thorough knowledge of the Administrative Code, various laws, and updates. Inspections are performed in accordance with <u>current</u> procedures and laws.	FDNY Non-Managerial performance evaluation tasks and standards sheet – Fire Protection Inspector
Reads, studies, or looks up (using computer, tablet, or smartphone) building codes, laws, rules, and ordinances to obtain details needed for inspections.	Yes -Research applicable codes.	Notice of Examination, Fire Protection Inspector, April 8, 2020
Reads and interprets architectural and engineering drawings of buildings and other structures to obtain details for inspections.	Yes - Written Comprehension: understanding written sentences and paragraphs. Example: A Fire Protection Inspector may use this ability when reading building plans, certificates of	Notice of Examination, Fire Protection Inspector, April 8, 2020

³⁷ [Standardized Training Curriculum for Inspectors \(nyc.gov\)](https://www.nyc.gov/site/fdny/training/standardized-training-curriculum-for-inspectors)

³⁸ [Standardized Training Curriculum for Inspectors \(nyc.gov\)](https://www.nyc.gov/site/fdny/training/standardized-training-curriculum-for-inspectors)

DOB Building Inspector (Construction)	FDNY Fire Protection Inspector	
Critical Tasks from the City's 2019 Job Analysis	Part of the FPI Tasks and Activities?	Source of Documentation
	fitness, warning signs, instructional materials and standard forms.	
Reads route sheet to identify sites selected for inspection during shift.	Yes – Fire protection inspector basic training includes a section on “Mapping, Routing, and Projecting: a. Learn how to read a NYC subway map. b. Describe how to route a full day’s work.”	Basic Course for Fire Protection Inspector Course outline
Drives a motor vehicle to and from inspection sites.	Yes - Operate a motor vehicle.	Notice of Examination, Fire Protection Inspector, April 8, 2020
Reads inspection checklists and indicates in writing the most appropriate response to each checklist item during inspection.	Yes - Complete and issue violation forms, orders and/or summons; Fill out appropriate forms as required.	Notice of Examination, Fire Protection Inspector, April 8, 2020
Writes reports detailing inspection procedures and findings.	Yes - Complete and issue violation forms, orders and/or summons; Fill out appropriate forms as required.	Notice of Examination, Fire Protection Inspector, April 8, 2020
Submits inspection reports along with any supporting evidence (e.g., pictures, attachments) via email or software application to supervisor for review.	Yes - Complete and issue violation forms, orders and/or summons; Fill out appropriate forms as required.	Notice of Examination, Fire Protection Inspector, April 8, 2020

We attempted to compare the associate fire protection inspector to the associate construction inspector. For associate fire protection inspector, we used the relatively complete job analysis we were provided by the City. For the associate construction inspector, we used available ancillary job information (e.g., NOEs) since the City did not provide job analysis information. However, given how vague and seemingly incomplete the ancillary information was for this job, we did not feel comfortable using the information to make a judgment regarding job similarity. For instance, when using the 2016 Associate Construction Inspector NOE, we found that very little information was provided about the job. The 2016 NOE description of the job was essentially four sentences and two of the sentences were “operate a motor vehicle” and “perform related work”. The other two sentences indicate that the associate level inspectors perform tasks similar to the inspector level job titles and supervise the work of those in inspector level job titles. Given how general this information is, we could not make a confident statement on similarity. However, to the extent the associate level positions for both jobs are basically skilled inspectors in their relevant discipline who also do first level supervisory roles (e.g., assign work, review work, provide feedback), then they may be similar. However, we would need more information to make a more definitive statement. If additional data on the FDNY and DOB jobs is made available by the City, then a further examination of the similarity of the jobs could be conducted.

Summary of Job Comparisons

In summary, based on the O*NET analyses, the job analysis provided for DOB construction and related documents on DOB inspector jobs, and the documents related to the FDNY inspector

positions that apparently are based on job analyses that have not been provided to us, we have every reason to believe that the FDNY and DOB inspector positions are similar with regard to the nature of the work performed. If job analyses are provided to us in the future, and if they are consistent with the information that we have seen to date about the jobs, we believe that we will be able to state to a reasonable degree of scientific certainty that the FDNY and DOB inspector and associate inspector jobs are similar in terms of the tasks/activities performed on the job and the capabilities/KSAs needed to do the job that their compensation should be substantially similar based on the nature of the job (i.e., activities performed and capabilities needed).

Is the Compensation of Inspectors at the FDNY and DOB Similar?

Description of the Data

The analysis of the compensation of inspectors from the FDNY and DOB was conducted using data from DCAS produced by the City. This data source included all personnel actions for DOB and FDNY inspectors including salary, ethnicity, job title, job level, agency, start date (City and agency), and age between 2004 and April 2020.³⁹ This data source could contain multiple records per employee in a fiscal year if multiple personnel actions occurred (e.g., pay raise, and then a promotion later in the year). To extract a single set of data for each employee for each fiscal year, the values associated with the last record in each fiscal year were used.

Inspectors in the DOB are paid on a 40-hour workweek. However, inspectors in the FDNY were paid on a 35-hour workweek until August 7, 2016.⁴⁰ After that date, they were paid on a 37.5-hour workweek. Therefore, the salaries between inspectors in the DOB and FDNY would be expected to differ as a result of the differences in the hours worked. To provide a common metric to compare the jobs, the hourly rate was computed for all inspectors. To compute the hourly rate for DOB inspectors, the base salary was divided by 2088. This is consistent with the hourly rate computation described in the collective bargaining agreement for DOB inspectors.⁴¹ For FDNY inspectors, the hourly rate for fiscal years 2017-2020 was computed as base salary divided by 1957.5. For fiscal years 2016 and earlier, the hourly rate was computed by dividing the base salary by 1827. These computations are consistent with the collective bargaining agreements covering FDNY inspector job titles.⁴²

In some of the analyses, tenure was included. Tenure was computed three ways. First, tenure was computed as whether the employee was on the “new hire rate” or “incumbent rate” of the relevant salary schedule. Employees who are new hires to New York City are paid on what is called “new hire rate.” On the two-year anniversary of the employee’s original appointment date with the City, the employee is paid at what is called the “incumbent rate.” Moving from the minimum new hire rate to the minimum incumbent rate involves a 15% increase in salary. Second, tenure was computed as the length of employment with the City in months at the end of the fiscal year. Third, tenure was computed as time in the current job title in months at the end of the fiscal year.

For a small number of FDNY and DOB inspectors, the agency entry date was much earlier than the City start date. For those employees, the city start date was replaced by the agency entry date. Additionally, for a small number of employees in the FDNY the pay rate was not aligned with the City start date, but the agency start date. For example, two inspectors with tenure less than 24 months were paid at the incumbent rate. In the underlying data, employee id 1640447 had a salary correction on or close to the initial start date that moved them from the new hire rate to the

³⁹ “FDNY LIt Data - Inspector Title Employee Data (Period Spanning Jan 2004 to April 2020.xlsx)”

⁴⁰ [ems-moa-2010-2018.pdf \(nyc.gov\)](https://www1.nyc.gov/assets/olr/downloads/pdf/collectivebargaining/cbu53-building-and-construction-inspectors-040105-to-120207.pdf)

⁴¹ <https://www1.nyc.gov/assets/olr/downloads/pdf/collectivebargaining/cbu53-building-and-construction-inspectors-040105-to-120207.pdf>

⁴² [ems-moa-2010-2018.pdf \(nyc.gov\)](https://www1.nyc.gov/assets/olr/downloads/pdf/collectivebargaining/cbu004-engineering-and-scientific-agreement-03032008-to-03022010.pdf)

[cbu004-engineering-and-scientific-agreement-03032008-to-03022010.pdf \(nyc.gov\)](https://www1.nyc.gov/assets/olr/downloads/pdf/collectivebargaining/cbu004-engineering-and-scientific-agreement-03032008-to-03022010.pdf)

incumbent rate. For this employee, the pay rate was used to determine if they were paid at the new hire or incumbent level. Other employee ids had pay at the new hire minimum based on agency tenure instead of City tenure. These employees were coded at the new hire level in the appropriate years (Employee Ids: 1041268, 579038, 996947, 1554233). Some employees with tenure at or slightly above 24 months tenure had not been moved from the new hire minimum to the incumbent rate. These inspectors were coded at the new hire rate for those years (Employee IDs: 906065, 1374185, 1393539, 1556560, 1556571, 1556585, 1556591, 1556595, 1556644, 1498177, 1661213, 1663061, 1017859, 1686321, 1468535).

The differences in tenure with the City between the FDNY and DOB inspectors and associate inspectors was examined, and the results are included in Appendix F. Overall, the FDNY inspectors had statistically significantly longer tenure than the DOB inspectors in about 2/3 of the 16 years of data and the FDNY associate inspectors had statistically significantly longer tenure than the DOB associate inspectors in all but two of the 16 years. In the other years, there were no statistically significant differences; tenure was statistically equivalent. In no years did the DOB inspectors or associate inspectors have statistically significantly longer tenure. Higher pay for DOB inspectors and associate inspectors thus cannot be the result of their having longer tenure than FDNY inspectors and associate inspectors.

Comparisons to National Salary Trends for FDNY and DOB Inspector and Associate Inspector Jobs

Data on the national trends can be obtained from the U.S. Bureau of Labor Statistics (BLS).⁴³ The BLS, like O*NET, classifies Fire Protection Inspectors jobs under the Standard Occupational Classification Code of 33-2021 Fire Inspectors and Investigators. Both the inspector and associate inspectors would be included in this classification. The BLS classifies the inspector job titles found in the DOB under the Standard Occupational Classification Code of 47-4011 Construction and Building Inspectors. Both the inspector and associate inspectors would be included in this classification.

According to the 2020 wage data from the BLS, Fire Inspectors have an average hourly wage of \$32.54 nationally.⁴⁴ For fire inspectors employed in local government, the national average hourly wage is \$33.18. According to the 2020 wage data from the BLS, Construction and Building Inspectors have an average hourly wage of \$31.96 nationally.⁴⁵ For construction and building inspectors employed in local government, the national average hourly wage is \$31.38. Fire Inspectors employed by local governments earn on average \$1.80 more than Construction Inspectors, which is about 6% of Construction Inspectors' pay. Table 16 contains this information. The differences in the pay rates of inspectors at the DOB and FDNY show the opposite pattern of what is typically seen nationally or in local government with construction inspectors being paid substantially more than fire inspectors.

⁴³ [Occupational Employment Statistics Home Page \(bls.gov\)](https://www.bls.gov/occupational-employment-statistics/)

⁴⁴ [Fire Inspectors and Investigators \(bls.gov\)](https://www.bls.gov/occupational-employment-statistics/33-2021-fire-inspectors-and-investigators/)

⁴⁵ [Construction and Building Inspectors \(bls.gov\)](https://www.bls.gov/occupational-employment-statistics/47-4011-construction-and-building-inspectors/)

Table 16

Metric	Fire Protection Inspectors	Construction Inspectors	Difference in Dollars	Difference as Percent
National Average	\$32.43	\$31.96	\$.47	1.5%
Local Government	\$33.18	\$31.38	\$1.80	5.7%
NYC New Hire - Inspector	\$23.81	\$29.76	-\$5.95	24.99%
NYC Incumbent Inspector	\$27.43	\$34.49	-\$7.06	25.75%
NYC Incumbent Associate Inspector Level 1	\$30.59	\$37.05	-\$6.46	21.12%
NYC Incumbent Associate Inspector Level 2	\$34.31	\$42.43	-\$8.12	23.67%

New York City Salary Trends for Inspector Jobs

The inspector jobs for the FDNY and DOB can be compared in terms of both the new hire average pay and the incumbent average pay (see Table 17). From 2005-2020, inspectors in the DOB were paid at a statistically significantly higher hourly rate than inspectors at the FDNY for both new hires and incumbents. This disparity in hourly pay has grown over time.

Table 17

Fiscal Year	New Hire				Incumbent			
	FDNY	DOB	Difference per Hour	Statistically Significant	FDNY	DOB	Difference per Hour	Statistically Significant
2005	\$18.22	\$22.52	\$4.29	Yes	\$21.09	\$23.25	\$2.16	Yes
2006	\$18.80	\$23.25	\$4.45	Yes	\$21.76	\$23.81	\$2.05	Yes
2007	\$19.94	\$23.62	\$3.69	Yes	\$23.09	\$24.88	\$1.79	Yes
2008	\$20.68	\$23.62	\$2.94	Yes	\$24.02	\$26.72	\$2.70	Yes
2009	\$21.57	\$24.02	\$2.45	Yes	\$25.02	\$27.69	\$2.67	Yes
2010 ⁴⁶	\$21.57	\$23.65	\$2.08	Yes	\$24.97	\$26.30	\$1.32	Yes
2011	\$21.57	\$23.23	\$1.66	Yes	\$24.90	\$26.48	\$1.57	Yes
2012	\$21.57	\$26.16	\$4.60	Yes	\$24.89	\$26.83	\$1.95	Yes
2013	\$21.57	\$27.27	\$5.71	Yes	\$24.85	\$26.81	\$1.96	Yes
2014	\$21.57	\$26.69	\$5.12	Yes	\$24.85	\$28.23	\$3.37	Yes
2015	\$21.57	\$26.43	\$4.87	Yes	\$24.87	\$28.71	\$3.84	Yes
2016	\$21.57	\$29.77	\$8.20	Yes	\$24.87	\$30.44	\$5.57	Yes
2017	\$23.11	\$29.82	\$6.71	Yes	\$26.61	\$30.43	\$3.82	Yes
2018	\$23.81	\$29.69	\$5.88	Yes	\$27.38	\$30.03	\$2.65	Yes
2019	\$23.81	\$29.79	\$5.98	Yes	\$27.45	\$31.63	\$4.19	Yes

⁴⁶ From time to time, the average pay for new hire or incumbent FDNY and DOB inspectors remains the same for several years. We understand this is because no new CBA was negotiated during that time. When a new CBA was negotiated, we understand that employees received percentage increases retroactively. We haven't tried to reflect those retroactive payments but because we understand that the retroactive adjustments tended to be about the same for the FDNY and DOB inspectors on a percentage basis they would not affect the opinions about pay differences.

Fiscal Year	New Hire				Incumbent			
	FDNY	DOB	Difference per Hour	Statistically Significant	FDNY	DOB	Difference per Hour	Statistically Significant
2020	\$23.81	\$29.76	\$5.95	Yes	\$27.43	\$34.49	\$7.07	Yes

The comparisons of the average hourly pay rate for FDNY and DOB inspectors was repeated using job titles for each fiscal year. The average hourly rate for each inspector job title is reported in Table 18. As is seen in the table, FDNY inspectors' average hourly rate is less than the DOB inspectors at both the new hire and incumbent rates. The "---" in the table indicates that there were no active employees in the category for that year.

Table 18

Fiscal Year	Fire Protection Inspector	Inspector (Construction)	Inspector (Elevators)	Inspector (Hoists & Rigging)	Inspector (Low Pressure Boiler)	Inspector (Multi-Discipline)	Inspector (Plumbing)	Inspector (Boilers)
New Hire								
2005	\$18.22	\$22.31	---		\$24.16	---	\$22.63	---
2006	\$18.80	\$23.20	---	\$23.12	\$24.39	---	\$23.14	---
2007	\$19.94	\$23.65	---	\$24.04	\$24.56	---	\$23.18	---
2008	\$20.68	\$23.41	\$23.93	\$22.93	\$25.71	---	\$24.34	---
2009	\$21.57	\$24.07	\$24.05	\$24.08	\$24.42	---	\$23.42	---
2010	\$21.57	\$23.85	---	\$23.00	---	---	\$23.42	---
2011	\$21.57	---	\$23.23	---	---	---	---	---
2012	\$21.57	\$25.12	\$25.70	---	\$27.33	\$26.12	\$26.12	---
2013	\$21.57	\$24.87	\$26.39	\$31.13	\$27.06	\$28.81	\$27.39	---
2014	\$21.57	\$25.33	\$26.81	\$30.79	---	\$30.23	\$26.23	---
2015	\$21.57	\$25.73	\$27.71	\$32.39	\$27.74	\$32.04	\$26.50	---
2016	\$21.57	\$29.57	\$29.60	\$34.53	\$29.60	---	\$29.62	---
2017	\$23.11	\$29.60	\$29.60	\$34.53	\$29.60	---	\$29.60	---
2018	\$23.81	\$29.60	\$29.60	\$34.53	\$29.60	---	\$29.60	---
2019	\$23.81	\$29.74	\$29.60	\$35.05	\$29.60	---	\$29.64	---
2020	\$23.81	\$29.67	\$29.89	\$35.57	\$30.04	---	\$30.17	---
Incumbent								
2005	\$21.09	\$23.07	---	\$23.36	\$24.22	---	\$23.86	---
2006	\$21.76	\$23.64	---	\$23.82	\$24.33	---	\$24.47	---
2007	\$23.09	\$24.74	---	\$24.77	\$24.91	---	\$26.34	---
2008	\$24.02	\$26.54	---	\$26.32	\$26.89	---	\$27.90	---
2009	\$25.02	\$27.52	\$30.21	\$30.29	\$27.93	---	\$27.79	---
2010	\$24.97	\$25.88	\$26.86	\$28.26	\$27.23	---	\$27.79	---

Fiscal Year	Fire Protection Inspector	Inspector (Construction)	Inspector (Elevators)	Inspector (Hoists & Rigging)	Inspector (Low Pressure Boiler)	Inspector (Multi-Discipline)	Inspector (Plumbing)	Inspector (Boilers)
2011	\$24.90	\$26.04	\$27.13	\$27.41	\$27.50	---	\$27.80	---
2012	\$24.89	\$26.30	\$27.40	\$29.39	\$26.99	---	\$28.19	---
2013	\$24.85	\$25.90	\$26.84	\$33.21	\$27.51	---	\$28.17	---
2014	\$24.85	\$27.08	\$28.41	\$34.81	\$28.16	\$29.99	\$28.96	---
2015	\$24.87	\$27.43	\$28.61	\$33.29	\$28.80	\$30.97	\$30.15	---
2016	\$24.87	\$29.80	\$29.60	\$34.53	\$30.16	\$32.67	\$31.53	---
2017	\$26.61	\$30.17	\$29.60	\$34.53	\$30.00	\$32.40	\$30.98	---
2018	\$27.38	\$29.86	\$29.60	\$34.53	\$29.64	\$32.99	\$30.10	---
2019	\$27.45	\$31.25	\$31.80	\$36.24	\$31.63	\$37.37	\$31.80	---
2020	\$27.43	\$34.83	\$34.52	\$36.95	\$31.72	\$36.58	\$32.99	\$41.01

To determine if there were statistically significant differences in the hourly pay for FDNY and DOB inspector job titles, an analysis of variance was conducted. This analysis is appropriate when comparing the averages of more than two groups.⁴⁷ As part of this analysis, comparisons of the FDNY fire protection inspector against each of the DOB inspector job titles were executed. These analyses are similar to t-tests in which two groups are compared on the average value of an outcome such as hourly pay. If there were two or fewer employees in a job title, the comparison was not examined.

The results are presented in Table 19. Values that are positive indicate that DOB inspectors earned more hourly pay than FDNY inspectors. Values with a star (*) indicate the difference is statistically significant at a minimum of two standard deviations. The “---” in the table indicates that there were two or fewer active employees in the category for that year. There was no instance where FDNY inspectors had statistically significantly higher hourly pay. All of the comparisons were statistically significant.

Table 19

Fiscal Year	Fire Protection Inspector vs.						
	Inspector (Construction)	Inspector (Elevators)	Inspector (Hoists & Rigging)	Inspector (Low Pressure Boiler)	Inspector (Multi-Discipline)	Inspector (Plumbing)	Inspector (Boilers)
New Hire							
2005	\$4.09*	---	---	\$5.94*	---	\$4.41*	---
2006	\$4.40*	---	\$4.32*	\$5.60*	---	\$4.35*	---
2007	\$3.71*	---	---	\$4.63*	---	\$3.24*	---

⁴⁷ Scherbaum, C. & Shockley, K. (2015). *Methods for Analysing Quantitative Data for Business and Management Students*. London: Sage.

Fiscal Year	Fire Protection Inspector vs.						
	Inspector (Construction)	Inspector (Elevators)	Inspector (Hoists & Rigging)	Inspector (Low Pressure Boiler)	Inspector (Multi-Discipline)	Inspector (Plumbing)	Inspector (Boilers)
2008	\$2.73*	\$3.25*	---	\$5.02*	---	\$3.65*	---
2009	\$2.51*	\$2.48*	\$2.51*	---	---	\$1.85*	---
2010	\$2.28*	---	---	---	---	\$1.85*	---
2011	---	---	---	---	---	---	---
2012	---	\$4.13*	---	\$5.76*	\$4.56*	\$4.56*	---
2013	\$3.31*	\$4.82*	\$9.56*	\$5.49*	\$7.24*	\$5.82*	---
2014	\$3.77*	\$5.25*	\$9.23*	---	\$8.66*	\$4.66*	---
2015	\$4.16*	\$6.15*	---	---	---	\$4.94*	---
2016	\$8.01*	\$8.03*	\$12.97*	\$8.03*	---	\$8.05*	---
2017 ⁴⁸	---	---	---	---	---	---	---
2018	\$5.79*	\$5.79*	\$10.72*	\$5.79*	---	\$5.79*	---
2019	\$5.93*	\$5.79*	---	\$5.79*	---	\$5.84*	---
2020	\$5.87*	\$6.08*	---	---	---	\$6.36*	---
Incumbent							
2005	\$1.98*	---	\$2.27*	---	---	\$2.77*	---
2006	\$1.87*	---	---	---	---	\$2.71*	---
2007	\$1.64*	---	---	---	---	\$3.24*	---
2008	\$2.52*	---	---	---	---	\$3.88*	---
2009	\$2.50*	---	---	\$2.91*	---	\$2.77*	---
2010	\$0.91*	---	---	\$2.26*	---	\$2.82*	---
2011	\$1.14*	---	\$2.50*	\$2.60*	---	\$2.90*	---
2012	\$1.41*	---	\$4.50*	\$2.10*	---	\$3.30*	---
2013	\$1.05*	---	\$8.35*	\$2.66*	---	\$3.32*	---
2014	\$2.23*	\$3.56*	\$9.96*	\$3.31*	\$5.14*	\$4.11*	---
2015	\$2.56*	\$3.74*	\$8.42*	\$3.93*	\$6.10*	\$5.28*	---
2016	\$4.93*	\$4.73*	\$9.66*	\$5.29*	\$7.80*	\$6.66*	---
2017	\$3.57*	\$2.99*	---	\$3.39*	\$5.79*	\$4.37*	---
2018	\$2.48*	\$2.21*	\$7.15*	\$2.26*	\$5.60*	\$2.72*	---
2019	\$3.81*	\$4.35*	\$8.79*	\$4.19*	\$9.93*	\$4.35*	---
2020	\$7.40*	\$7.09*	\$9.52*	\$4.29*	\$9.15*	\$5.56*	---

The differences between the DOB and FDNY inspector job titles were then examined while controlling for job relevant factors that could be associated with the amount of hourly pay using regression analyses. Common job relevant factors include tenure, time in current job, education, or performance.⁴⁹ Historically, the City of New York has not collected consistent or complete

⁴⁸ In 2017, no statistical significance tests were performed as there was insufficient variation in the new hire hourly pay within each title (i.e., the salaries within a job title were all the same or very similar).

⁴⁹ Doverspike, D., Arthur Jr, W., & Flores, C. (2017). Analyzing EEO Disparities in Pay: A Primer on Structuring the Analyses. In S. Morris & E. Dunleavy (Eds.) *Adverse impact analyses: Understanding data, statistics, and risk* (pp. 197-215). Routledge: New York.

data on educational attainment or job performance. Therefore, these variables cannot be included. However, time in current job title and new hire/incumbent status can be included as job relevant factors.

In the regression analyses, hourly pay was regressed on a tenure variable representing the new hire or incumbent rate, a variable for the time in the current job (in months), and a variable for the agency. Job level was not included in these analyses as the inspector job titles, with a small number of exceptions, do not include job levels in most years.⁵⁰ Separate regression analyses were conducted for each fiscal year between 2005 and 2020. The regression analyses provide an indication of the overall statistical significance of the regression model, the percent of variance in hourly pay that is explained by the job relevant factors, and the value of the regression coefficients along with the statistical significance of that coefficient.

The model is statistically significant each year because the values reflected in the second column are less than .05; indeed, in each year they are less than .0005. The next column, entitled R^2 , reflects the amount of variation in pay among all inspectors explained by the model. For example, in 2020 it explains 71% of the variation in pay among inspectors.

Given that the outcome variable in the regression model is hourly pay in dollars, the metric of the regression coefficients also is in dollars per hour. The coefficient for the tenure variable representing the new hire/incumbent rate represents the additional hourly pay to an employee at the incumbent level. The coefficient for time in current job title variable represents the additional hourly pay for each additional month in current job title. The coefficient for the agency variable represents the additional hourly pay of a DOB inspector over a FDNY inspector.

The results are presented in Table 20.⁵¹ Even after controlling for two tenure variables, DOB inspectors are paid more per hour than FDNY inspectors. The difference in hourly rate has increased over time. In 2005, DOB inspectors made \$2.49 more per hour than FDNY inspectors after controlling for incumbency and tenure. This difference in hourly pay had more than doubled by 2020 to \$6.66 per hour.

Table 20

Year	Model Significance	R^2	Intercept	Incumbent Rate	Tenure in Title	Agency
2005	0.000	0.784	\$19.77	\$0.84	\$0.00	\$2.49
2006	0.000	0.614	\$19.79	\$1.23	\$0.01	\$2.90

Sady, K. & Aamodt, M. (2017). Analyzing EEO disparities in pay. In S. Morris & E. Dunleavy (Eds.) *Adverse impact analyses: Understanding data, statistics, and risk* (pp. 216-238). Routledge: New York.

Noonan, P.M. & Biddle, D.A. (2010). *Compensation analysis: A practitioner's guide to identifying and addressing compensation disparities*. Biddle Group: Folsom, CA.

⁵⁰ For most years, only multi-discipline inspectors had title levels and the majority of the employees in this job title were at level 1. Also, in 2020, title levels were added to the DOB job titles. Despite not controlling for title level in 2020, the results conform to the pattern observed in all other years. Even with the re-organization in the DOB, very few years had inspectors with levels.

⁵¹ All of the coefficients in this table are statistically significant at two standard deviations or more. The statistical significance is omitted from this table.

Year	Model Significance	R^2	Intercept	Incumbent Rate	Tenure in Title	Agency
2007	0.000	0.699	\$20.59	\$1.57	\$0.01	\$2.57
2008	0.000	0.763	\$20.65	\$2.81	\$0.01	\$2.92
2009	0.000	0.785	\$21.29	\$3.03	\$0.01	\$2.73
2010	0.000	0.731	\$21.49	\$2.31	\$0.01	\$1.85
2011	0.000	0.770	\$21.44	\$2.41	\$0.01	\$1.92
2012	0.000	0.663	\$22.12	\$1.71	\$0.01	\$2.79
2013	0.000	0.438	\$23.05	\$0.93	\$0.01	\$3.07
2014	0.000	0.574	\$22.30	\$2.02	\$0.00	\$3.94
2015	0.000	0.639	\$21.92	\$2.27	\$0.01	\$4.28
2016	0.000	0.881	\$22.44	\$1.22	\$0.01	\$6.95
2017	0.000	0.785	\$24.11	\$0.79	\$0.01	\$5.40
2018	0.000	0.774	\$24.88	\$0.74	\$0.01	\$4.30
2019	0.000	0.848	\$24.14	\$1.90	\$0.01	\$5.32
2020	0.000	0.711	\$23.05	\$2.98	\$0.03	\$6.66

This analysis was repeated using the job titles. These regression analyses included a variable for the new hire/incumbent rate, a variable for the time in the current job (in months), and indicators for the job title. The strategy used to create indicators is called “dummy coding”. In this strategy, variables are created to indicate if the employee holds the job title or not. For example, a variable for DOB construction inspectors would assign a value of ‘1’ to employees with this job title and a value of ‘0’ to FDNY inspectors and all other DOB inspectors. In this strategy, one job title is identified as the reference group. In these regression analyses, FDNY inspectors were the reference group. Therefore, the regression coefficient for the DOB inspector job titles represents the additional pay per hour they receive over FDNY inspectors. The value of the intercept in the regression model represents the pay of an FDNY inspector at the new hire rate with zero time in the current job.

The results are presented in Table 21.⁵² Even after controlling for two tenure variables, DOB inspectors in each title are paid more per hour than FDNY inspectors. The difference in hourly rate has increased over time for each DOB inspector job title with a number of the coefficients doubling when comparing 2005 to 2020.

⁵² All of the coefficients in this table are statistically significant at two standard deviations or more. The statistical significance is omitted from this table.

Table 21

Year	Model Significance	R²	Intercept (Fire Protection Inspector)	Incumbent Rate	Tenure in Title	Construction Inspector	Elevator Inspector	Hoist and Rigging Inspector	Low-Pressure Boiler Inspector	Multi-Discipline Inspector	Plumbing Inspector
2005	0.000	0.660	\$19.65	\$0.91	\$0.01	\$2.29	---	\$2.60	\$4.23	---	\$3.01
2006	0.000	0.728	\$19.79	\$1.18	\$0.01	\$2.77	---	\$3.01	\$3.77	---	\$3.28
2007	0.000	0.711	\$20.54	\$1.63	\$0.01	\$2.45	---	\$2.79	\$3.68	---	\$2.96
2008	0.000	0.789	\$20.64	\$2.82	\$0.01	\$2.72	\$3.27	\$2.49	\$4.30	---	\$3.87
2009	0.000	0.789	\$21.29	\$3.01	\$0.01	\$2.64	\$3.17	\$3.45	\$3.26	---	\$2.76
2010	0.000	0.764	\$21.45	\$2.38	\$0.01	\$1.47	\$2.66	\$3.08	\$2.86	---	\$2.89
2011	0.000	0.802	\$21.44	\$2.43	\$0.01	\$1.49	\$2.06	\$3.02	\$2.98	---	\$3.12
2012	0.000	0.754	\$21.79	\$2.23	\$0.01	\$1.74	\$3.74	\$4.88	\$4.12	\$4.23	\$3.77
2013	0.000	0.781	\$22.28	\$1.81	\$0.01	\$1.51	\$3.71	\$8.83	\$3.88	\$6.48	\$3.88
2014	0.000	0.815	\$22.08	\$2.04	\$0.01	\$2.72	\$4.44	\$9.25	\$3.69	\$6.78	\$4.23
2015	0.000	0.814	\$22.08	\$1.69	\$0.01	\$3.23	\$5.06	\$9.38	\$4.69	\$7.74	\$4.80
2016	0.000	0.933	\$22.46	\$1.06	\$0.01	\$6.54	\$6.71	\$11.57	\$6.72	\$8.86	\$7.16
2017	0.000	0.893	\$24.09	\$0.80	\$0.01	\$5.17	\$5.14	\$10.15	\$5.05	\$7.00	\$5.36
2018	0.000	0.852	\$24.90	\$0.70	\$0.01	\$4.20	\$3.88	\$9.01	\$3.92	\$6.74	\$4.25
2019	0.000	0.912	\$24.20	\$1.78	\$0.01	\$5.12	\$5.41	\$10.16	\$5.24	\$10.73	\$5.31
2020	0.000	0.710	\$23.13	\$2.99	\$0.03	\$6.66	\$6.27	\$10.07	\$4.54	\$8.69	\$5.46

New York City Salary Trends for Associate Inspector Jobs

The associate inspector jobs for the FDNY and DOB can be compared in terms of the hourly pay at the incumbent level (see Table 22). There were no FDNY inspectors at the new hire level between 2005-2020, and therefore, no comparison can be made. Additionally, only DOB low

pressure boiler inspector are at level 0 and only FDNY associate fire protection inspectors are at level 3. Therefore, the table only contains the comparison of FDNY and DOB inspectors at levels 1 and 2. A '---' in the table indicates that there were too few inspectors to conduct a statistical significance test. As can be seen in the table, associate inspectors in the DOB at title level 1 and title level 2 were paid at a statistically significant higher hourly rate than associate inspectors at the FDNY between 2009 and 2020. This disparity in the hourly rate has grown over time.

Table 22

Fiscal Year	FDNY	DOB	Difference	Statistically Significant
Incumbent Title Level 1				
2005	\$23.87	\$26.52	\$2.65	---
2006	\$24.64	\$27.29	\$2.65	---
2007	\$26.16	\$29.17	\$3.01	---
2008	\$27.23	\$30.77	\$3.54	---
2009	\$27.73	\$31.95	\$4.22	Yes
2010	\$27.73	\$31.52	\$3.79	Yes
2011	\$27.73	\$31.65	\$3.93	Yes
2012	\$27.73	\$32.00	\$4.28	Yes
2013	\$27.73	\$31.53	\$3.80	Yes
2014	\$27.73	\$33.17	\$5.44	Yes
2015	\$27.72	\$33.79	\$6.07	Yes
2016	\$27.72	\$34.77	\$7.05	Yes
2017	\$29.71	\$35.07	\$5.37	Yes
2018	\$30.61	\$35.19	\$4.59	Yes
2019	\$30.60	\$36.95	\$6.35	Yes
2020	\$30.59	\$37.05	\$6.46	Yes
Incumbent Title Level 2				
2005	\$26.44	\$30.05	\$3.60	Yes
2006	\$27.27	\$30.70	\$3.43	Yes
2007	\$28.93	\$32.89	\$3.96	Yes
2008	\$30.05	\$34.99	\$4.95	Yes
2009	\$31.20	\$36.25	\$5.05	Yes
2010	\$31.18	\$36.27	\$5.09	Yes
2011	\$31.18	\$36.37	\$5.19	Yes
2012	\$31.16	\$36.90	\$5.73	Yes
2013	\$31.15	\$35.90	\$4.74	Yes
2014	\$31.16	\$37.81	\$6.65	Yes
2015	\$31.08	\$38.55	\$7.46	Yes
2016	\$31.11	\$40.20	\$9.09	Yes
2017	\$33.34	\$40.07	\$6.73	Yes
2018	\$34.43	\$39.79	\$5.35	Yes
2019	\$34.31	\$42.16	\$7.85	Yes
2020	\$34.31	\$42.43	\$8.12	Yes

The comparisons of the average hourly pay rate for the FDNY and DOB associate inspectors were repeated using job titles for each fiscal year (see Table 23). New hires are omitted because there were no new hire associate fire protection inspectors and only title levels 1 and 2 are reported because the lack of both FDNY and DOB inspectors at levels 0 and 3. The “---” in the table indicates that there were no active employees in the category for that year. As is seen in the table FDNY associate inspectors’ average hourly rate has been less than the DOB associate inspectors every year in every title since 2005 at both title level 1 and level 2.

Table 23

Fiscal Year	Associate Fire Protection Inspector	Associate Inspector (Construction)	Associate Inspector (Elevators)	Associate Inspector (Hoists & Rigging)	Associate Inspector (Plumbing)	Associate Inspector (Boilers)
Incumbent Title Level 1						
2005	\$23.87	\$26.27	\$26.00	\$29.13	\$27.85	\$29.03
2006	\$24.64	\$27.09	\$27.19	\$28.51	\$27.54	\$29.93
2007	\$26.16	\$29.33	\$28.65	\$29.65	\$29.12	\$29.28
2008	\$27.23	\$30.78	\$30.35	\$27.49	\$31.39	\$31.48
2009	\$27.73	\$32.05	\$31.33	\$31.70	\$32.15	\$32.33
2010	\$27.73	\$31.29	\$32.01	\$31.70	\$32.54	\$32.76
2011	\$27.73	\$31.37	\$32.23	\$32.02	\$32.59	\$33.09
2012	\$27.73	\$31.81	\$32.30	\$32.34	\$32.76	\$33.42
2013	\$27.73	\$31.31	\$32.07	\$37.36	\$32.08	\$31.48
2014	\$27.73	\$33.08	\$33.59	---	\$33.92	\$32.92
2015	\$27.72	\$33.68	\$34.37	\$36.56	\$33.60	\$33.75
2016	\$27.72	\$34.80	\$35.64	\$37.65	\$31.94	\$34.76
2017	\$29.71	\$35.22	\$35.76	\$37.47	\$32.19	\$34.76
2018	\$30.61	\$35.43	\$35.19	\$37.29	\$33.17	\$34.76
2019	\$30.60	\$36.94	\$37.37	\$40.03	\$35.57	\$37.34
2020	\$30.59	\$37.09	\$35.63	\$40.03	\$35.56	\$37.34
Incumbent Title Level 2						
2005	\$26.44	\$29.54	\$29.82	\$33.19	\$30.66	\$32.18
2006	\$27.27	\$29.93	\$31.73	\$33.85	\$29.58	\$32.82
2007	\$28.93	\$32.68	\$33.01	\$35.21	\$32.33	\$34.94
2008	\$30.05	\$35.12	\$34.60	---	\$34.84	\$36.05
2009	\$31.20	\$36.34	\$35.87	---	\$36.21	\$37.03
2010	\$31.18	\$36.36	\$35.71	---	\$36.42	\$37.49
2011	\$31.18	\$36.33	\$36.07	---	\$36.79	\$37.87
2012	\$31.16	\$37.00	\$36.34	---	\$37.36	---
2013	\$31.15	\$36.13	\$35.90	---	\$33.78	\$36.77
2014	\$31.16	\$38.26	\$37.54	---	\$35.70	\$39.89

Fiscal Year	Associate Fire Protection Inspector	Associate Inspector (Construction)	Associate Inspector (Elevators)	Associate Inspector (Hoists & Rigging)	Associate Inspector (Plumbing)	Associate Inspector (Boilers)
2015	\$31.08	\$38.93	\$38.48	\$41.06	\$36.68	\$40.88
2016	\$31.11	\$40.56	\$40.92	---	\$38.29	\$42.11
2017	\$33.34	\$40.44	\$41.20	---	\$38.29	\$42.11
2018	\$34.43	\$39.96	\$41.93	---	\$38.29	\$40.91
2019	\$34.31	\$42.16	\$43.20	---	\$41.11	\$43.90
2020	\$34.31	\$42.37	\$41.15	---	---	\$44.09

To determine if there were statistically significant differences in the hourly pay for FDNY and DOB associate inspector job titles, an analysis of variance was conducted. This analysis is appropriate when comparing the averages of more than two groups.⁵³ As part of this analysis, comparisons of the FDNY associate fire protection inspector against each of the DOB associate inspector job titles were executed. These analyses are similar to t-tests in which two groups are compared on the average value of an outcome such as hourly pay. If there were two or fewer employees in a job title, the comparison was not examined. Given there are no associate fire protection inspectors at the new hire rate, this comparison was not conducted.

The results are presented in Table 24 for each title level and fiscal year for incumbents. Values that are positive indicate that DOB associate inspectors earned more hourly pay than FDNY associate inspectors. Values with a star (*) indicate the difference is statistically significant at least two standard deviations. The “---” in the table indicates that there were fewer than three active employees in the category for that year. In every year in which a comparison could be performed, DOB associate inspectors have earned statistically significantly more per hour than FDNY associate inspectors.

Table 24

Fiscal Year	Associate Fire Protection Inspector vs.				
	Associate Inspector (Construction)	Associate Inspector (Elevators)	Associate Inspector (Hoists & Rigging)	Associate Inspector (Plumbing)	Associate Inspector (Boilers)
Incumbent Title Level 1					
2005	---	---	---	---	---
2006	---	---	---	---	---
2007	---	---	---	---	---
2008	---	---	---	---	---
2009	\$4.32*	\$3.60*	---	\$4.42*	\$4.60*
2010	\$3.56*	\$4.28*	---	\$4.81*	\$5.03*
2011	\$3.65*	\$4.50*	---	\$4.86*	\$5.36*

⁵³ Scherbaum, C. & Shockley, K. (2015).

Fiscal Year	Associate Fire Protection Inspector vs.				
	Associate Inspector (Construction)	Associate Inspector (Elevators)	Associate Inspector (Hoists & Rigging)	Associate Inspector (Plumbing)	Associate Inspector (Boilers)
2012	\$4.08*	\$4.57*	---	\$5.03*	\$5.69*
2013	\$3.58*	\$4.34*	---	\$4.35*	---
2014	\$5.35*	\$5.20*	---	\$6.19*	---
2015	\$5.96*	\$6.66*	---	\$5.89*	---
2016	\$7.09*	\$7.93*	---	\$4.22*	---
2017	\$5.51*	\$6.05*	---	\$2.49*	---
2018	\$4.82*	\$4.58*	---	\$2.56*	---
2019	\$6.34*	\$6.76*	---	\$4.97*	---
2020	\$6.45*	---	---	\$4.97*	---
Incumbent Title Level 2					
2005	\$3.10*	\$3.37*	---	\$4.22*	---
2006	\$2.65*	\$4.45*	---	\$2.31*	---
2007	\$3.75*	\$4.09*	---	\$3.40*	---
2008	\$5.07*	\$4.56*	---	\$4.79*	---
2009	\$5.14*	\$4.67*	---	\$5.01*	---
2010	\$5.17*	\$4.53*	---	\$5.24*	---
2011	\$5.15*	\$4.89*	---	\$5.61*	---
2012	\$5.84*	\$5.18*	---	\$6.19*	---
2013	\$4.98*	\$4.75*	---	\$2.63*	---
2014	\$7.10*	\$6.38*	---	\$4.54*	---
2015	\$7.85*	\$7.39*	---	\$5.60*	---
2016	\$9.45*	\$9.82*	---	\$7.18*	---
2017	\$7.10*	\$7.68*	---	\$4.95*	---
2018	\$5.53*	\$7.50*	---	\$3.86*	\$6.48*
2019	\$7.86*	\$8.89*	---	\$6.81*	\$9.59*
2020	\$8.07*	---	---	---	---

The differences between the DOB and FDNY associate inspector job titles were then examined while controlling for job relevant factors that could be associated with the amount of hourly pay using regression analyses. Common job relevant factors include tenure, time in current job, education, or performance.⁵⁴ Historically, the City of New York has not collected consistent or complete data on educational attainment or job performance. Therefore, these variables cannot be included. However, time in current job title and tenure with the city can be included as job relevant factors.

In the regression analyses, hourly pay was regressed on a tenure variable representing the new hire or incumbent rate, a variable for the time in the current job (in months), and a variable for

⁵⁴ Doverspike, D., Arthur, W., & Flores, C. (2017).

Sady, K. & Aamodt, M. (2017).

Noonan, P.M. & Biddle, D.A. (2010).

the agency. Job level was included in these analyses as a separate variable. The choice to include title level as a separate variable instead of including it as part of the dummy coding of the variables was driven by two factors. First, the increase from level to level was fairly consistent between jobs. Second, using a dummy coding strategy with the title level would have led to some variables having very small sample sizes and poorly estimated coefficients. Separate regression analyses were conducted for each fiscal year between 2005 and 2020. The regression analyses provide an indication of the overall statistical significance of the regression model, the percent of variance in hourly pay that is explained by the job relevant factors, and the value of the regression coefficients along with the statistical significance of that coefficient. Given that the outcome variable in the regression model is hourly pay in dollars, the metric of the regression coefficients is in dollars.

The model significance and R^2 columns have the same meaning as explained above. The coefficient for the tenure variable representing the new hire/incumbent rate represents the additional hourly pay by an employee at the incumbent level. The coefficient for time in current job title variable represents the additional hourly pay for each additional month in current job title. The coefficient for level represents the average increase in hourly pay for higher job levels. The coefficient for the agency variable represents the additional hourly pay of a DOB associate inspector over a FDNY associate inspector.

The results are presented in Table 25.⁵⁵ Even after controlling for two tenure variables and title level, DOB associate inspectors are paid more per hour than FDNY associate inspectors. The difference in hourly rate has increased over time. In 2005, DOB associate inspectors made \$3.39 more per hour than FDNY associate inspectors after controlling for tenure and level. This difference in hour pay had doubled by 2020 to \$6.93 per hour.

Table 25

Year	Model Significance	R^2	Intercept	Incumbent Rate	Tenure in Title	Title Level	Agency
2005	0.000	0.618	\$18.76	\$1.49	\$0.01	\$2.84	\$3.35
2006	0.000	0.603	\$20.23	\$0.62	\$0.01	\$2.90	\$3.32
2007	0.000	0.577	\$20.10	\$1.79	\$0.01	\$3.09	\$3.88
2008	0.000	0.572	\$20.77	\$1.74	\$0.01	\$3.27	\$4.63
2009	0.000	0.698	\$19.51	\$4.37	\$0.01	\$3.27	\$4.48
2010	0.000	0.669	\$19.54	\$4.06	\$0.01	\$3.29	\$4.26
2011	0.000	0.667	\$23.92	---	\$0.01	\$3.05	\$4.15
2012	0.000	0.673	\$23.76	---	\$0.01	\$3.19	\$4.54
2013	0.000	0.681	\$23.96	---	\$0.01	\$3.18	\$3.92
2014	0.000	0.740	\$23.66	---	\$0.01	\$3.31	\$5.78
2015	0.000	0.795	\$21.60	\$2.28	\$0.01	\$3.28	\$6.52
2016	0.000	0.824	\$22.25	\$1.34	\$0.01	\$3.40	\$7.83

⁵⁵ All of the coefficients in this table are statistically significant at two standard deviations or more except for incumbent rate in 2006, 2016, and 2017. The statistical significance is omitted from this table.

Year	Model Significance	R ²	Intercept	Incumbent Rate	Tenure in Title	Title Level	Agency
2017	0.000	0.797	\$28.06	-\$2.26	\$0.01	\$3.33	\$5.64
2018	0.000	0.810	\$26.79	---	\$0.01	\$3.38	\$4.65
2019	0.000	0.854	\$22.81	\$3.67	\$0.01	\$3.46	\$6.88
2020	0.000	0.878	\$26.45	---	\$0.01	\$3.50	\$6.93

This analysis was repeated using the job titles. These regression analyses included a variable for the new hire/incumbent rate, a variable for the time in the current job (in months), title level, and indicators for the job title. The strategy used to create indicators is called “dummy coding”. In this strategy, variables are created to indicate if the employee holds the job title or not. For example, a variable for DOB associate construction inspectors would assign a value of ‘1’ to employees with this job title and a value of ‘0’ to FDNY associate inspectors and all other DOB associate inspectors. In this strategy, one job title is identified as the reference group. In these regression analyses, FDNY associate inspectors were the reference group. Therefore, the regression coefficient for the DOB associate inspector job titles represents the additional pay per hour they receive over FDNY associate inspectors. The value of the intercept in the regression model represents the pay of an FDNY associate inspector at the new hire rate, at title level 0 with zero time in the current job.

The results are presented in Table 26.⁵⁶ All of the regression models were statistically significant so that column is omitted from the table. Even after controlling for two tenure variables and title level, DOB associate inspectors are paid more per hour than FDNY associate inspectors. The difference in hourly rate has increased over time for each DOB associate inspector job title. The coefficients have doubled comparing 2005 to 2020 for the two job titles with the largest number of employees, associate construction inspector and associate elevator inspector.

Table 26

Year	R ²	Intercept (Assoc. Fire Protection Inspector)	Incumbent Rate	Tenure in Title	Title Level	Associate Construction Inspector	Associate Elevator Inspector	Associate Hoist and Rigging Inspector	Associate Low-Pressure Boiler Inspector	Associate Plumbing Inspector	Associate Boiler Inspector
2005	0.726	\$18.72	\$1.32	\$0.01	\$2.92	\$3.02	\$3.01	\$5.77	\$5.88	\$4.74	\$5.96
2006	0.666	\$20.00	\$0.81	\$0.01	\$2.90	\$2.91	\$3.75	\$5.12	\$6.00	\$3.29	\$5.72
2007	0.586	\$20.18	\$1.67	\$0.01	\$3.09	\$3.91	\$3.53	\$4.81	---	\$4.04	\$4.88

⁵⁶ All of the coefficients in this table are statistically significant at two standard deviations or more except incumbent rate for 2015-2017. The statistical significance is omitted from this table.

Year	R²	Intercept (Assoc. Fire Protection Inspector)	Incumbent Rate	Tenure in Title	Title Level	Associate Construction Inspector	Associate Elevator Inspector	Associate Hoist and Rigging Inspector	Associate Low-Pressure Boiler Inspector	Associate Plumbing Inspector	Associate Boiler Inspector
2008	0.596	\$20.66	\$1.76	\$0.01	\$3.28	\$4.70	\$4.02	\$1.72	\$7.00	\$5.48	\$5.72
2009	0.703	\$19.64	\$4.24	\$0.01	\$3.26	\$4.51	\$3.95	\$4.46	\$4.78	\$4.86	\$5.38
2010	0.679	\$19.70	\$3.92	\$0.01	\$3.27	\$4.06	\$4.37	\$4.56	\$4.90	\$5.19	\$5.58
2011	0.679	\$23.95	---	\$0.01	\$3.04	\$3.91	\$4.28	\$4.62	\$4.68	\$5.14	\$5.67
2012	0.680	\$23.75	---	\$0.01	\$3.19	\$4.38	\$4.51	\$4.91	\$5.10	\$5.48	\$5.66
2013	0.697	\$23.93	---	\$0.01	\$3.19	\$3.81	\$4.17	\$9.68	\$4.35	\$3.88	\$4.65
2014	0.744	\$23.57	---	\$0.01	\$3.36	\$5.79	\$5.82	---	\$7.23	\$5.41	\$6.99
2015	0.806	\$21.92	\$1.83	\$0.01	\$3.36	\$6.51	\$6.64	\$10.03	\$9.29	\$5.74	\$7.80
2016	0.835	\$22.11	\$1.24	\$0.01	\$3.58	\$7.95	\$8.61	\$10.66	\$9.95	\$6.53	\$9.00
2017	0.815	\$24.75	\$0.81	\$0.01	\$3.51	\$5.86	\$6.22	\$8.28	\$8.95	\$4.15	\$6.63
2018	0.829	\$26.54	---	\$0.01	\$3.54	\$4.79	\$5.09	\$7.14	\$7.18	\$3.49	\$5.41
2019	0.867	\$22.71	\$3.56	\$0.01	\$3.57	\$6.87	\$7.18	\$9.99	\$9.78	\$6.03	\$8.17
2020	0.887	\$26.41	---	\$0.01	\$3.52	\$6.92	\$6.41	\$9.82	\$9.52	\$5.31	\$7.88

Conclusions

We have been retained by plaintiffs' legal counsel to examine (1) whether FDNY inspector job are similar to the DOB inspector job titles in terms of the nature of the work that is performed by those in these job titles, (2) whether there are disparities in the race composition between inspectors in the FDNY and inspectors in the DOB, (3) whether there are statistically significant disparities in the compensation received between inspectors in the FDNY and inspectors in the DOB, and (4) based on the comparison of the jobs whether there is a job-relevant rationale based on the nature of the work for why the job should be paid differently. Based on our review and analysis, we find that:

1. The DOB and FDNY inspector job titles perform similar task and work activities;
2. The City has not produced sufficient documents to determine whether based on the information in those documents the DOB and FDNY inspector job titles have similar knowledge, skill, and ability requirements, but based on the information available in O*NET, they do have similar knowledge, skill, and ability requirements;
3. The DOB inspector job titles are predominately White and the FDNY inspector job titles are predominately Minority;
4. The DOB inspectors are paid statistically significantly more per hour than FDNY inspectors even after taking job-relevant factors into account;
5. Given the similarity in the work performed and capabilities needed to perform that work, it is unclear why there is a large disparity in the pay, and we have not seen any job-relevant reasons related to the nature of the work that support this difference in pay.

If additional data or information becomes available to us following the submission of this report, we reserve the right to supplement the current report based on additional work that we are asked to perform.



Harold W. Goldstein, Ph.D.

06/09/2021

Date



Charles A. Scherbaum, Ph.D.

06/09/2021

Date

Appendix A
Curriculum Vitae for Dr. Harold Goldstein

Harold W. Goldstein, Ph.D.

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Cell: (609) 658-6528
Fax: (609) 935-0528
hgoldstein@sienaconsulting.com

Education

University of Maryland, College Park	I/O Psychology	1993	Ph.D.
University of Maryland, College Park	I/O Psychology	1991	M.A. University of
Michigan, Ann Arbor	Psychology-Honors	1987	B.A.

Employment History

Baruch College, Psychology Dept	Professor	1/17 - present
Baruch College, Psychology Dept	Associate Professor	1/03 – 12/16
Baruch College, Psychology Dept	Assistant Professor	9/97 – 12/02
New York Univ., Psychology Dept	Visiting Assistant Professor	9/95 – 8/97
BGSU, Psychology Dept	Assistant Professor	9/92 – 8/95

Professional Appointments, Positions, Memberships, and Awards

Positions:

Director of MS and MBA I/O Psychology Programs, Baruch College - CUNY (9/00 – present)

Journals:

Journal of Business and Psychology Editorial Board (1/09 – present)

Journal of Applied Psychology Editorial Board (1/02 – 12/07)

Ad Hoc Reviewer for Journal of Applied Psychology, Personnel Psychology, Journal of Applied Social Psychology, and Law and Human Behavior

Memberships:

Society of Industrial/Organizational Psychology (SIOP)

Academy of Management

American Psychological Association (APA)

Awards:

IPAC 2011 and 2017 Award recipient for Innovations in Testing

SIOP M. Scott Myers Award 2011 and 2021 recipient for Applied Research in the Workplace

SIOP/SHRM HR Impact Award 2021 for evidence-based HR initiative

Consulting Experience

Siena Consulting
Independent Consultant

Principal
Consultant

1/95 – present
9/93 – 12/94

Experience with a wide array of clients from both the private and public sectors across numerous industries such as manufacturing, telecommunications, financial services, pharmaceutical, and high tech. Project consulting experience also includes work with public safety and government agencies. In addition, has served as an expert witness for entities that include the Department of Justice and the Lawyers' Committee for Civil Rights.

Clients include:

Morgan Stanley	Federal Bureau of Investigation
National Football League	United States Department of Defense
SC Johnson	United States Department of Agriculture
Merck	United States Department of Justice
AT&T	Jefferson County Government
Ford	FDNY
Sacramento Kings	Chicago Public Schools
Los Angeles Rams	NYC Department of Education
Giant Eagle	Alabama State Police
UBS	Pennsylvania State Police
ST Micro	City of Dayton Police and Fire
Hewlett Packard	City of Akron Fire
Bank of America/Merrill Lynch	Pennsylvania Power & Light
JP Morgan Chase	Arlington County Sheriff
Visteon	Lutron

Projects include:

Competency Modeling
Organizational Culture Diagnosis
Culture to Performance Linkage Analyses
Organizational Change Initiatives
Organizational Survey and HR Audits
Training and Development Programs
Managerial Coaching & Development Planning
Entry-level and Promotional Staffing Exams
Validation Studies and Legal Expert Witness
Structured Behavioral Interviewing
Managerial Assessment Centers
Performance Appraisal Systems
Expert Witness and Legal Work

Teaching Experience

- Personnel Selection (Undergraduate, Masters/MBA, Doctoral level)

- Leadership and Managerial Development (Undergraduate, Masters/MBA, Doctoral level) Training and Development (Doctoral level)
- Personnel Psychology (Masters/MBA, Doctoral level) Organizational Psychology (Masters/MBA, Doctoral level)
- Introduction to I/O Psychology (Undergraduate, Masters, Doctoral level) Social Psychology (Masters level)
- Introduction to Psychology (Undergraduate level)

Publications

Chou, V. P., Omansky, R., Scherbaum, C. A., Yusko, K. P., & Goldstein, H. W. (2019). The use of specific cognitive abilities in the workplace. In D. McFarland (Ed.), *General and Specific Abilities*. Newcastle upon Tyne, UK: Cambridge Scholars Publishing.

Yusko, K., Aiken, J., Goldstein, H., Scherbaum, C. & Larson, E. (2019). Solving the “Quarterback Problem”: Using Psychological Assessment to Improve Selection Decisions in Professional Sports. In R.R. Sims and S.K. Bias (Eds.) *Human Resources Management Issues, Challenges and Trends: “Now and Around the Corner”*. Information Age Publishing.

Larson, E., Yusko, K., Scherbaum, C., Goldstein, H., Aiken, J., and Oliver, L. (2018). Modernizing intelligence in the workplace: Recent developments in theory and measurement in intelligence at work. In V. Zeigler and T. Shackelford (Eds.), *The Sage Handbook of Personality and Individual Differences*. Thousand Oaks, CA: Sage Publications.

Scherbaum, C., Dickson, M., Larson, E., Bellenger, B., Yusko, K., & Goldstein, H. (2018). Creating Test Score Bands for Assessments Involving Ratings using a Generalizability Theory Approach to Reliability Estimation. *Personnel and Assessment Decisions*, 4(1), 1 – 8.

Goldstein, H., Pulakos, E., Passmore, J., & Semedo, C. (2017). *The Wiley-Blackwell Handbook of the Psychology of Recruitment, Selection, and Employee Retention*. Hoboken, NJ: John Wiley & Sons.

Scherbaum, C., Goldstein, H., Ryan, R., Agnello, P., Yusko, K., & Hanges, P. (2015). New Developments in Intelligence Theory and Assessment: Implications for Personnel Selection. In J. Oostrom & I. Nikolaou's (Eds.) *Employee Recruitment, Selection, and Assessment. Contemporary Issues for Theory and Practice* (99-116). London: Psychology Press-Taylor & Francis.

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Scherbaum, C. & Goldstein, H. (2015). Introduction to special issue. *Human Resource Management Review*, 25, 1-3.

Sabet, J., Scherbaum, C., & Goldstein, H. (2013). Examining the potential of neuropsychological intelligence tests for predicting academic performance and reducing racial/ethnic test scores differences. In F. Metzger's (Ed.) *Neuropsychology: New Research* (pp. 1-24). New York: Nova Publishers.

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Scherbaum, C. A., Goldstein, H. W., Yusko, K. P., Ryan, R., & Hanges, P. J. (2012). Intelligence 2.0: Reestablishing a research program on g in I-O Psychology. Industrial and Organizational Psychology: Perspectives on Science and Practice, 5(2), 128-148.

Naidoo, L. J., Scherbaum, C. A., Goldstein, H. W., & Graen, G. B. (2011). A longitudinal examination of the effects of LMX, ability, and differentiation on team performance. Journal of Business and Psychology, 26(3), 347-357.

Goldstein, H. W., Scherbaum, C. A., & Yusko, K. P. (2009). Revisiting g: Intelligence, adverse impact, and personnel selection. In J. L. Outtz (Ed.), Adverse impact: Implications for organizational staffing and high stakes selection. New York: Taylor & Francis.

Yusko, K. P., Goldstein, H. W., & Fabrizio, S. B. (2008/09; 2009/10). The management of human capital: Essential practices for law offices. Eagan, MN: West Publishing.

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Scherbaum, C. A., & Goldstein, H. W. (2008). Examining the relationship between race-based differential item functioning and item difficulty. Educational and Psychological Measurement, 68(4), 537-553.

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Goldstein, H. W., Yusko, K. P., & Nicolopoulos, V. (2001). Exploring Black-White Subgroup Differences of Managerial Competencies. Personnel Psychology, 54(4), 783-807.

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Schneider, B., Smith, D. B., & Goldstein H. W. (2000). Attraction-Selection-Attrition: Toward a person-environment psychology of organizations. In Walsh, Craik, & Price (Eds.), Person-Environment Psychology (2nd Edition) (pp. 61-86). Mahwah, NJ: Lawrence Erlbaum Associates.

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Goldstein, I.L., & Goldstein, H.W. (1990). Training as an approach for organizations to the challenges of human resource issues in the year 2000. Journal of Organizational Change Management, 3, 30-43.

Smith, B. D., Davidson, R.A., Smith, D.L., Goldstein, H.W. & Perlstein, W. (1989). Sensation seeking and arousal: Effects of strong stimulation on electrodermal activation and memory task performance. Personality and Individual Differences, 10, 671-679.

Conference Papers and Presentations

Goldstein, H., Yusko, K., & Larson, E. (2021). Achieving diversity and validity using modern perspectives on assessing intelligence. Innovations in Testing Conference, Annual Meeting of the Association of Test Publishers.

Goldstein, H., Yusko, K., Scherbaum, C., Larson, E., and Ryan, R. Development and Implementation of the National Football League's Player Assessment Test. Selected for the 2021 Society of Industrial/Organizational Psychology's (SIOP) M. Scott Myers Award for applied research in the workplace. Paper presented at the 35th Annual Conference of the Society of Industrial/Organizational Psychology, New Orleans, LA.

Larson, E., & Goldstein, H. (April 2021). The drive to learn: Developing talent in sports using I-O principles. In E. Heggstad's (Chair) Talent Management in Elite Sports: Using an I/O Lens. Symposium conducted at the 36th Annual Conference of the Society for Industrial and Organizational Psychology, New Orleans, LA.

Valentine, A., Yusko, K., Larson, E., & Goldstein, H. (2021, April) (Session Cancelled Due to COVID-19). Impact of assessment-based global leadership program. In W. Shepherd's (Chair) Assessment-Based Leadership Development Programs: The state of the art (and science).

Symposium conducted at 35th Annual Conference of the Society for Industrial and Organizational Psychology, Austin, TX.

Goldstein, H., Yusko, K., Scherbaum, C., & Larson, E. (2021, February). *Assessing and Developing Talent: Lessons Learned from the NFL Project*. Invited talk at the Metropolitan New York Association for Applied Psychology.

Kato, A., Wee, S., Lang, J., Goldstein, H., & Nye, C. (2020, April) (Session Cancelled Due to COVID-19). Panelist in A. Kato & S. Wee's *Translating Research on Specific Cognitive Abilities into Opportunities for Practice*. Alternative session conducted at the 35th Annual Conference of the Society for Industrial and Organizational Psychology, Austin, TX.

Yusko, K., Goldstein, H., Scherbaum, C., and Larson, E. (2020). *The future of cognitive ability assessment*. Invited presentation to the U.S. Office of Personnel Management's task force on the use of cognitive ability testing in employment. Washington, DC.

Scherbaum, C., Goldstein, H., & Yusko, K. (October 2019). Using Psychological Assessments to Predict Player Performance in the NFL, Leading Edge Consortium, Atlanta, Georgia.

Dimitroff, T., Stamoulis, D., & Goldstein, H., (October 2019). NFL General Manager's View on Assessment and Talent, Leading Edge Consortium, Atlanta, Georgia.

Goldstein, H., Scherbaum, C., & Yusko, K., (July 2019). Modern Perspectives on the Assessment of Intelligence, Keynote at International Personnel Assessment Council Annual Conference, Minneapolis, MN.

Yusko, K., Goldstein, H., & Scherbaum, C., (June 2019). Moneyball Plus: Predicting Player Performance Using Psychological Assessments in Sports, Sports Analytics World Series, KPMG, Amsterdam.

Larson, E., Chou, V., Lee, P., Scherbaum, C., Freed, S., Pineault, L., Keval, N., Dickson, M., Aiken, J., & Goldstein, H. (April, 2019). Generalizability theory estimates of interview reliability. Poster presented at the 34th annual conference of the Society for Industrial and Organizational Psychology, National Harbor, MD.

Guzzo, R., Yusko, K., Goldstein, H., Scherbaum, C. A., Larson, E., Ryan, R., & Nalbantian, H. (April, 2018). Using assessment to predict success in sports: NFL case study and panel discussion. Alternative format case study/panel discussion to be presented at the 33rd annual conference of the Society for Industrial and Organizational Psychology, Chicago, IL.

Agnello, P., Scherbaum, C., Goldstein, H., & Yusko, K. (2018, April). Reasoning with Pseudowords in a Cognitive Ability Context. In J. Cottrell (Chair), What's New in Adverse Impact? Exploring Theory, Techniques, Test Types, and Tools. Session at the 33rd annual conference of the Society for Industrial and Organizational Psychology, Chicago, IL.

Kato, A. E., Scherbaum, C. A., Dickson, M. W., Crenshaw, J. L., Bellenger, B. L., Beckman, S., Goldstein, H. W., & Yusko, K. P. (2018, April). Examining Agreement in Job Analysis Ratings of Cognitive and Non-Cognitive KSAOs. Poster presented at the 33rd annual conference of the Society for Industrial and Organizational Psychology, Chicago, IL.

Scherbaum, C., Oliver, L., Yusko, K., Goldstein, H., Agnello, P., Stahl, W., Bellenger, B., Crenshaw, J., Dawson, T., Dickson, M., Aiken, J., & Larson, E. (2018, April). Using Job Component Validity to Hire Quickly and at Low Cost under a Consent Decree. Poster to be presented at the 33rd annual conference of the Society for Industrial and Organizational Psychology, Chicago, IL.

Jonson, J., Ortiz, S., Suzuki, L., Goldstein, H. W., Solano-Flores, G., & Camilli, G. (2018, April). Diverse perspectives on critical fairness issues in testing. Presenter panel at the National Council on Measurement in Education Annual Meeting. New York, NY.

Goldstein, H. W. (2017). Presenter on *Strategies for reducing subgroup differences on high stakes intelligence tests*. Invited presentation at the Buros Institute working meeting on Fairness in Educational and Psychological Tests: Critical Issues and Methodological Solutions. Omaha, NE.

Goldstein, H. W. (2017). Panelist in M. Dickson's *From the extreme to the norm: Transferable learnings from challenging assessment situations*. Panel discussion at the 2017 annual conference of the International Personnel Assessment Council. Birmingham, AL.

Scherbaum, C., Yusko, K., Goldstein, H.W., Dickson, M., Aiken, J., Oliver, L., Bellenger, B., Crenshaw, J., Dawson, T., Agnello, P., Larson, E., & Stahl, W. (2017). *Jefferson County Job Components Validity Study*. Paper presented at the 2017 annual conference of the International Personnel Assessment Council. Birmingham, AL.

Goldstein, H. W. (2017). Panelist in C. Scherbaum's *New Developments and Challenges in Cognitive Ability Assessment*. Panel discussion at the 2017 annual conference of the International Personnel Assessment Council. Birmingham, AL.

Goldstein, H. W. (2017). Panelist in J. Aiken's *Transforming Organizations under HR-Focused Consent Decrees*. Panel presentation at the 2017 annual conference of the International Personnel Assessment Council (IPAC) Conference, Birmingham, AL.

Goldstein, H., Yusko, K., Scherbaum, C., Larson, E., & Ryan, R. (2017, April). Presenter on *Reducing Racial Differences on Intelligence Tests for Personnel Selection*. Symposium at Society of Industrial and Organizational Psychology, Orlando, FL.

Goldstein, H. & Larson, E. (2016, April). Presenter on *Diversity and IT Jobs: Alternatives for predicting the success of women*. Symposium at Society of Industrial and Organizational Psychology, Anaheim, CA.

Yusko, K., Scherbaum, C., & Goldstein, H. (2017, March). *NFL Player Assessment: Using Psychological Tests To Predict Player Performance In The NFL*. Paper for the MIT Sloan Sports Analytics Conference, Boston, MA.

Dickson, M., Goldstein, H., Klein, A., Lundquist, K., Oliver, L., and Yusko, K. (2016, April). Panelist on *Implementing Deep Organizational Change in HR-Focused Consent Decree*

Situations. Panel Discussion at Society of Industrial and Organizational Psychology, Anaheim, CA.

Goldstein, H., (2015, December). *Solving the quarterback problem: Using intelligence tests to hire a diverse and talented workforce*. Invited Talk at Columbia University, Columbia University, NY.

Goldstein, H. W. (2015, April). Chair of panel titled *Consulting in High Stakes Scenarios: Lessons Learned*. Panel Discussion at the 30th annual conference of the Society for Industrial and Organizational Psychology, Philadelphia.

Goldstein, H. W. (2015, February). Panelist on A. Klein's Legal Settlement Agreements to Drive Organizational Change. Panel Presentation at the Impact Fund Annual Conference, Berkeley, CA.

Ryan, R., Rothstein, J., Goldstein, H., & Scherbaum, C. (2014, August). *Immigrant Status, Test Attitudes, and Cognitive Ability Test Performance*. Poster presented at the annual conference of the American Psychological Association.

Sywulak, L. Oliveira, J., Rothstein, J., Scherbaum, C., & Goldstein, H. (2014, August). *The role of cognitive style in performance on Raven's*. Poster presented at the annual conference of the American Psychological Association.

Keeney, J., Outtz, J., Tippins, N., Moomaw, M. Lundquist, K., Goldstein, H.W., Mehri, C. (2013, April). Panel Discussion: Serving as an Expert Witness: Advice from the Trenches. Presented at the annual conference of the Society of Industrial and Organizational Psychology, Houston, TX.

Parson, C., Artistico, D., & Goldstein, H.W. (2013, April). Poster: Ethical Climate, Self-Constraint, and Unethical Decision Making. Presented at the annual conference of the Society of Industrial and Organizational Psychology, Houston, TX.

Scherbaum, C.A., & Goldstein, H.W. (2012, August). Symposium: The evolution of cognitive ability testing: Getting past g. Presented at the Annual Conference of the American Psychological Association, Orlando.

Yusko, K.P., Goldstein, H.W., Scherbaum, C.A., & Hanges, P.J. (2012, April). Symposium: Siena Reasoning Test: Measuring intelligence with reduced adverse impact. Presented at the 27th annual conference of the Society for Industrial and Organizational Psychology, San Diego.

Scherbaum, C. A., Hanges, P.J., Yusko, K.P., Goldstein, H.W., & Ryan, R. (2012, April). Symposium: The Spearman Hypothesis cannot explain all racial score differences. Presented at the 27th annual conference of the Society for Industrial and Organizational Psychology, San Diego.

Sabet, F., Scherbaum, C.A., & Goldstein, H.W. (2012, April). Examining Criterion-related Validity and Score Differences on Neuropsychological Intelligence Tests. Poster presented at the 27th annual conference of the Society for Industrial and Organizational Psychology, San Diego.

Yusko, K. P., & Goldstein, H. W. Symposium: The Siena Reasoning Test: Innovations in Assessment. Presented at IPAC 2011 in Washington, DC.

Goldstein, H. W., Scherbaum, C. A., Yusko, K. P., Ryan, R., & Hanges, P. J. Symposium: Testing for cognitive ability with reduced adverse impact: Hiring in work organizations. Presented at ISIR 2010 in Alexandria, VA.

Outtz, J. L., Goldstein, H. W., Jacobs, R. R., Murphy, K. R., Newman, D. A., & Sackett, P. R. Panel Discussion: Adverse impact: Implications for organizational staffing and high-stakes selection. Presented at SIOP 2010 in Atlanta, GA.

Saltz, J. L., Goldstein, H. W., Braverman, E. P., Conn, A. B., Fuller, J. A., Pulakos, E. D., & Welle, B. Panel Discussion: From fantasy to reality: Talent management lessons from fantasy baseball. Presented at SIOP 2010 in Atlanta, GA.

Paullin, C. J., Yusko, K. P., Goldstein, H. W., Oliver, L. O., & Hanges, P. J. Symposium: Cognitive ability testing: Exploring new models, methods, statistical techniques. Presented at SIOP 2010 in Atlanta, GA.

Goldstein, H. W., Battista, M., Cappelli, P., Jerden, A. D., & Macey, W. H. Panel Discussion: Shape of things to come: What is the new world of work? Presented at SIOP 2010 in Atlanta, GA.

Dennis, M., Goldstein, H. W., Hurd, J., Paullin, C., Putka, D., & Yusko, K. P. The next generation of cognitive ability tests – Predicting learning criteria, job knowledge, and on-the-job performance. Presented at IPAC 2009 in Nashville, TN.

Goldstein, H. W. Symposium: Unraveling ethnic differences in structured interviews. Discussant role. Presented at SIOP 2009 in New Orleans.

Naidoo, L. J., Scherbaum, C. A., Goldstein, H. W., & Graen, G. B. A longitudinal examination of the effects of LMX, ability, and differentiation on team performance. Presented at SIOP 2009 in New Orleans, La.

Staniewicz, M. J., Goldstein, H. W., & Rentsch, J. R. eLeadership and social internet experience on integrative virtual team tasks. Presented at SIOP 2009 in New Orleans, La.

Goldstein, H. W. Building cognitive ability tests with reduced adverse impact. Invited talk at Wayne State University on March 11, 2009.

Goldstein, H. W. Building cognitive ability tests with reduced adverse impact. Presented at MAPAC Fall 2008 conference in New York, NY.

Yusko, K. P., & Goldstein, H. W. Testing for cognitive ability with reduced adverse impact. Presented at IPMAAC 2008 in Oakland, CA.

Ferreter, J. M., Goldstein, H. W., Scherbaum, C., A., Yusko, K.P., & Yun, H. Examining adverse impact using a nontraditional cognitive assessment. Presented at SIOP 2008 in San Francisco, CA.

Goldstein, H. W. I/O Psychology and Helping Organizations. Presented at SIOP 2007 in New York, NY.

Sipe, M., & Goldstein, H. W. Black-White differences in reading comprehension: The measure matters. Presented at SIOP 2006 in Dallas, TX.

Nicolopoulos, V., & Goldstein, H. W. National Culture Compatibility and Merger and Acquisition Performance. Presented at SIOP 2006 in Dallas, TX.

Scherbaum, C. A., Hayrapetyan, L., & Goldstein, H. W. Examining the Relationship Between Differential Item Functioning and Item Difficulty. Presented at SIOP 2006 in Dallas, TX.

Outtz, J. L., Goldstein, H. W., Ferreter, J. Divergent and convergent thinking: Test response format and adverse impact. Presented at SIOP 2005 in Los Angeles, CA.

Scherbaum, C., Yusko, K. P., Goldstein, H. W., & Kern, M. Differential person functioning related to biodata attributes. Presented at SIOP 2005 in Los Angeles, CA.

Yusko, K. P., & Goldstein, H. W. A cognitive mapping approach to understanding choice of negotiation strategy. Presented at the 2004 Academy of Management in New Orleans, LA.

Mayer, D., Nishii, L., Schneider, B., & Goldstein, H. W. Creating a fair environment: The effect of leader personality on justice climate levels and outcomes. Presented at the 2004 Academy of Management in New Orleans, LA.

Dickson, M. W., Hargis, M. B., Kuttner, D., Binning, J. F., Yusko, K., Rose, D. S., Brinkmeyer, K. R., Adorno, A. J., Goldstein, H. W. Panel Discussion. Practicing I-O Psychology: There's No Business Like I-O Business. Presented at SIOP 2004 in Chicago, IL.

Ruminson, K. C., & Goldstein, H. W. Leadership strategic styles: Behavioral chameleons and situational engineers. Presented at SIOP 2004 in Chicago, IL.

Ruminson, K. C., & Goldstein, H. W. Adaptation and environmental mastery as approaches to leadership environments. Presented at SIOP 2004 in Chicago, IL.

Dotan, O., Goldstein, H. W., Nishii, L., & Mayer, D. Leader-Member exchange, group-level processes, and group performance. Presented at SIOP 2004 in Chicago, IL.

Dotan, O., & Goldstein, H. W. Leader-Member exchange (LMX) theory: Reintroducing the construct of differentiation. Presented at SIOP 2004 in Chicago, IL.

Nishii, L., Mayer, D., Goldstein, H. W., & Dotan, O. Diversity and bottom-line performance: The moderating role of leader-member exchanges. Presented at SIOP 2004 in Chicago, IL.

Adorno, A., Binning, J., Brinkmeyer, K., Dickson, M., Goldstein, H., Hargis, M., Kuttner, D., Rose, D., Yusko, K. Panel Discussion: Practicing I-O Psychology: There's no business like I-O business. Presented at SIOP 2004 in Chicago, IL.

Ruminson, K. C., Goldstein, H. W., Yusko, K. P., & Braverman, E. P. Behavioral flexibility, proactive personality, and leadership style-environment congruence. Presented at SIOP 2003 Conference in Orlando, FL.

Goldstein, H. W. Revisiting assumptions: Validity, adverse impact, and personnel selection. Invited talk at the Department of Psychology, University of Maryland-College Park on 3/10/03.

Goldstein, H. W., & Lefkowitz, J. Surviving a Title VII Inquiry. Invited training workshop at MAPAC in New York, NY on 10/9/02.

Goldstein, H. W., Ruminson, K. C., & Yusko, K. P. Breaking homogeneity in work organizations. Presented at the Academy of Management 2002 Conference in Denver, CO.

Goldstein, H. W. Reducing Black-White differences on selection tests. Invited talk at MAPAC in Princeton, NJ on 5/17/02.

Goldstein, H. W., Ruminson, K. C., & Yusko, K. P. Test composite weighting: The impact on subgroup differences and validity. Presented at SIOP 2002 Conference in Toronto, Canada.

Goldstein, H. W., & Dotan, O. VDL: A leadership theory of work group level performance. Presented at SIOP 2002 Conference in Toronto, Canada.

Goldstein, H. W. g: Is this your final answer? Invited talk at METRO in New York, NY on 1/16/02.

Ruminson, K. C., & Goldstein, H. W. Achieving organizational change in an ASA framework. Presented at SIOP 2001 Conference in San Diego, CA.

Goldstein, H. W. Selection instruments: Which predict best? Invited talk as keynote speaker at Personnel Testing Council meeting in Long Beach, California on 11/3/00

Goldstein, H. W. Selection instruments: Which predict best? Invited talk as keynote speaker at IPMAAC meeting in Washington, D. C. on 6/6/00.

Goldstein, H. W., Ruminson, K. C., Smith, D. B., & Yusko, K. P. Symposium: The impact of test composite score weighting procedures on Black-White subgroup differences. Presented at SIOP 2000 Conference in New Orleans, LA.

Goldstein, H. W. Panel Discussion: Out of sight, out of mind? Finishing the Ph.D. Long-distance. Presented at 2000 SIOP Conference in New Orleans, LA.

Yusko, K. P., & Goldstein, H. W. Practitioner Forum: Selecting the right consultant and keeping everyone happy. Presented at 2000 SIOP Conference in New Orleans, LA.

Goldstein, H. W. Exploring Black-White Subgroup Differences in Selection. Invited talk at the Department of Psychology, New York University on 3/30/00.

Goldstein, H. W. Understanding Black-White Differences in Personnel Selection. Invited talk at Teachers College, Columbia University on 10/26/99.

Goldstein, H. W. Selection instruments: Which predict best? Invited talk at MAPAC meeting in New York, NY on 10/1/99.

Goldstein, H. W., Riley, Y., & Yusko, K. P. Symposium: Exploration of Black-White subgroup differences on interpersonal constructs. Presented at SIOP 1999 Conference in Atlanta, Georgia.

Goldstein, H. W., & Smith D. B. Poster Session: Vertical dyadic linkage theory: A leadership theory of group performance. Presented at SIOP 1998 Conference in Dallas, TX.

Goldstein, H. W., Hoffman, M., & Yusko, K. P. Symposium: Crisis leadership: The role of follower efficacy perceptions. Presented at 1997 Academy of Management Conference in Boston, MA.

Yusko, K.P. & Goldstein, H.W. Practitioner forum: Building a high performance organization: A performance management approach. Presented at 1997 SIOP Conference in St. Louis, MO.

Smith, D.B. & Goldstein, H.W. Symposium: Personality, the ASA model, and Organizational Attraction. Presented at 1996 SIOP Conference in San Diego, California.

Goldstein, H.W., Yusko, K.P., & Braverman, E.P. Symposium: Why do subgroup differences vary based on the type of testing methods used? Presented at 1996 SIOP Conference in San Diego, California.

Goldstein, H.W. (Chair), Debate: The bell curve and beyond, Presenters: Linda S. Gottfredson, Milton D. Hakel, Edwin A. Locke, James L. Outtz. Presented at SIOP for 1995 Conference in Orlando, Florida.

Goldstein, H. W. Symposium: Framing of a crisis: Threat versus opportunity. Presented at 1994 New Avenues In Risk and Crisis Management Conference in Las Vegas, NV.

Schneider, B., Smith, D.B., & Goldstein, H.W. Symposium: The “Dark Side” of “Good Fit”. Presented at the 1994 Academy of Management Meeting in Dallas, Texas.

Goldstein, H.W. Paper presentation: The Implications of VDL Theory for Work Unit Effectiveness. Presented at APA for 1994 Conference in Los Angeles, California.

Braverman, E.P., Brutus, S., & Goldstein, H.W. Measuring self-efficacy: Where has all the variability gone? Presented at SIOP for 1994 Conference in Nashville, Tennessee.

Goldstein, H.W. Symposium: Followers in a crisis: A person-environment perspective. Presented at SIOP for 1994 Conference in Nashville, Tennessee.

Goldstein, H.W. Symposium: Crisis leadership: Followers in a crisis. Presented at 1993 New Avenues In Risk and Crisis Management Conference in Las Vegas, NV.

Goldstein, H.W., Braverman, E.P., & Chung, B. Symposium: Selection tests: The effect of different testing methodologies on subgroup differences. Presented at SIOP 1993 Conference in San Francisco, California.

Goldstein, H.W., Noonan, K., & Schneider, B. Symposium: Individual, contextual, and performance correlates of job analysis survey responses. Presented at SIOP 1992 Conference in Montreal, Canada.

Research Grants

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| 2009-10 | MERInstitute of the Graduate Management Admissions Council, Scherbaum, C., Goldstein, H. W., Rothstein, H., & Holowczak, R. Improving Graduate Business School Admissions: Supplementing the GMAT with Alternative Predictors, \$100,000. |
| 2004 | Equipment Grant, Scherbaum, C., Goldstein, H. W., & Cohen-Charash, Y. Detecting response distortion in non-cognitive predictors of job performance, \$5,450.00. |
| 2000 | PSC–CUNY, Goldstein, H. W., Understanding Black-White differences on selection tests, \$5,625.00. |

Expert Witness Consultation

Mary Lou Tilton v. Daniel Glickman, Secretary Department of Agriculture. Report. Plaintiff. 1999.

United States v. State of Alabama. Provided advice and reviewed materials for Organization and Personnel Research, Inc., which was charged with evaluating new staffing procedures for state wide jobs. Defendant. 2001-02

City of Erie, Pennsylvania, Police Department. United States considering case based on adverse impact on entry-level physical agility test. Provided advice and reviewed materials for the U. S. Department of Justice. Plaintiff. 2001.

United States v. State of Delaware et al., C.A. No. 01-020-RRM (D. Del.). Served as expert witness for the U.S. Department of Justice on case involving the state police entry-level exam. Plaintiff. 2002-2003.

Arthur L. Lewis et al., v. City of Chicago, No. 98 C 5596. Served as expert witness for Chicago Lawyers' Committee for Civil Rights on case involving the fire department entry-level exam. Plaintiff. 2003-2004.

City of New York Fire Department Case. USAO No. 2005V02001. Providing advice to Department of Justice on physical abilities test. Plaintiff. 2006.

NTEU and FDIC Arbitration, Case# 1276. Providing advice to NTEU. Plaintiff. 2006-2007.

United States v. Jefferson Co., et al., C.A. No. CV75-P-0666-S (N. D. AL.). Served as expert for the U.S. Department of Justice on police promotion exams. Plaintiff. 2001 – 2008.

Charles E. Dudley v. City of Macon, John Wood, et al. v. City of Macon, et al., C.A. No. 5:00-CV-515-3(DF). Providing advice to Department of Justice on case. Plaintiff. 2006 - 2009.

Armstrong v. Ford and Visteon. Case #: 3:01-cv-00012. Agreed upon I/O consultant to evaluate HR practices for consent decree. Both Parties. 2005-2007.

Easterling v. State of Connecticut Department of Correction. Civil Action No.3:08CV0826(JCH). Served as expert for Easterling regarding Correction Officer physical ability test. Plaintiff. 2010.

Vulcan Society v. City of New York. Memorandum & Order 07-cv-2067 (NGG) (RLM). Representative expert for the Vulcan Society for development of the new firefighter selection test. Plaintiff. 2010 – 2012; 2018 – 2019.

Calibuso v. Bank of America, et al, Case No: 2:10-CV-01413(PKC)(AKT). Agreed upon I/O consultant to conduct a study of FA teaming within U.S. Wealth Management for the purpose of generating recommendations to facilitate improved teaming arrangements for women FAs. Both parties. 2014 – 2016.

Jaffe v. Morgan Stanley Smith Barney (Formerly Jaffe v. Morgan Stanley). Case No. C-06- 3903 (THE). Agreed upon I/O consultant to evaluate and implement programmatic change throughout organization. Both parties. 2010 – 2017.

Morgan Stanley Smith Barney Consolidated Agreement (Formerly Amochaev v. Citigroup Global Markets-Smith Barney and Augst-Johnson v. Morgan Stanley). Case No. 1:06-cv- 01142

(RWR) and Case No. C-05-1298 PJH (N.D. Cal). Agreed upon I/O consultant to evaluate and implement programmatic change throughout organization. Both parties. 2008 - 2017.

United States of America v. City of Buffalo, et al., W.D.N.Y. 74-cv-195C. Consultant for the Lawyers' Committee for Civil Rights Under Law to provide expert recommendations on a promotional selection process. Plaintiff. 2018.

Simpson et al. v. Cook County Sheriff Department, Case No. 18 C 553. Consultant and expert on selection systems. Plaintiff. 2019 - current.

Richardson et al. v. City of New York. 17-CV-9447 (JPO). Consultant and expert on compensation and performance management systems. Plaintiff. 2019 – current.

Chalmers, et al. v. City of New York. Case No. 1:20-cv-03389-AT. Consultant and expert on compensation and performance management system. Plaintiff. 2019 – current.

United States v. City of Cleveland Fire Department. Advising the United States Department of Justice on their investigation of the entry-level and promotional selection procedures. Plaintiff. 2021-Present.

United States v. City of Durham Department. Advising the United States Department of Justice on their investigation of the entry-level selection procedures. Plaintiff. 2021-Present.

United States v. City of Fayetteville Fire Department. Advising the United States Department of Justice on their investigation of the entry-level selection procedures. Plaintiff. 2021-Present.

United States v. Charles County, MD Sheriff's Office. Advising the United States Department of Justice on their investigation of the entry-level selection procedures. Plaintiff. 2021-Present.

Appendix B
Curriculum Vitae for Dr. Charles Scherbaum

Charles A. Scherbaum, Ph.D.
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Education

- August 2003 Ph.D. Psychology, Ohio University, Athens, Ohio
 Chair: Jeffrey B. Vancouver
 Dissertation Title: “Detecting intentional response distortion on measures of the five-factor model personality: The differential person functioning approach”
- August 2001 M.S. Psychology, Ohio University, Athens, Ohio
 Chair: Jeffrey B. Vancouver
 Thesis Title: “Testing a computational goal-discrepancy reducing model of goal discrepancy creation”
- December 1997 B.S. Psychology, University of Washington, Seattle, Washington

Books

Scherbaum, C. & Shockley, K. (2015). *Methods for Analysing Quantitative Data for Business and Management Students*. London: Sage.

Publications (33)

Kuzmich, I. & Scherbaum, C. (in press). Identifying faking on forced-choice personality items using mouse tracking. *Personnel Assessments and Decisions*.

Lee, P. J., Rainone, N., Aiken, J. R., Dickson, M., Scherbaum, C., Chen, T., & Hanges, P. J. (2020). Where are they now? Re-examining the migration of I-O psychologists to business schools. *The Industrial-Organizational Psychologist*, 57(4).

Scherbaum, C. Dickson, M., Larson, E., Bellenger, B., Yusko, K., & Goldstein, H. (2018). Creating Test Score Bands for Assessments Involving Ratings using a Generalizability Theory Approach to Reliability Estimation. *Personnel and Assessment Decisions*, 4.

Scherbaum, C.A., Black, J., & Weiner, S. (2017). With the Right Map, Survey Key Driver Analysis Can Help Get Organizations to the Right Destination. *Industrial and Organizational Psychology: Perspectives on Science and Practice*.

Oliveira, J. & Scherbaum, C. (2017). Moderating Effect of Job Type on Job Characteristic—Worker

Outcome Relationships. *Psychology Research*, 7, 164-185.

Hanges, P., Scherbaum, C., & Reeve, C. (2015). There are More Things in Heaven and Earth, Horatio, Than DGF. *Industrial and Organizational Psychology: Perspectives on Science and Practice*, 8, 472-481.

Mellert, L., Scherbaum, C., Wilke, B., & Froelich, J. (2015). The relationship between organizational change and financial loss. *Journal of Organizational Change Management*, 28, 59-71.

Oliveira, J. & Scherbaum, C. (2015). Effects of activating team diversity dimensions on member perceptions of conflict, trust, and respect. *The New School Psychology Bulletin*, 13, 21-37.

Reeve, C. Scherbaum, C., & Goldstein, H. (2015). Manifestations of intelligence: Expanding the measurement space to reconsider specific cognitive abilities. *Human Resource Management Review*, 25, 28-37.

Scherbaum, C. & Goldstein, H. (2015). Introduction to special issue. *Human Resource Management Review*, 25, 1-3.

Cohen-Charash, Y., Scherbaum, C.A., Kammeyer-Mueller, J.D., & Staw, B.M. (2013) Mood and the Market: Can Press Reports of Investors' Mood Predict Stock Prices? *PLoS ONE* 8(8): e72031. doi:10.1371/journal.pone.0072031

Scherbaum, C. & Meade, A. (2013). New directions for measurement in management research. *International Journal of Management Reviews*, 15, 132-148.

Scherbaum, C.A., Sabet, J.M., Kern, M.J., & Agnello, P. (2013). Examining faking on personality inventories using unfolding IRT models. *Journal of Personality Assessment*, 95, 207-216.

Hanges, P., Scherbaum, C., Goldstein, H., Ryan, R. & Yusko, K. (2012). I-O Psychology and Intelligence: A Starting Point Established. *Industrial and Organizational Psychology: Perspectives on Science and Practice*, 5, 189-195.

Scherbaum, C. Goldstein, H., Yusko, K., Ryan, R., & Hanges, P. (2012). Intelligence 2.0: Reestablishing a Research Program on g in I-O Psychology. *Industrial and Organizational Psychology: Perspectives on Science and Practice*, 5, 128-148.

Naidoo, L.J., Scherbaum, C.A., Goldstein, H.W., & Graen, G. (2011). A Longitudinal Examination of LMX, Ability, Differentiation and Team Performance. *Journal of Business and Psychology*, 26, 347-357.

Saari, L. & Scherbaum, C. (2011). Identified employee surveys: Potential promise, perils, and professional practice guidelines. *Industrial and Organizational Psychology: Perspectives on Science and Practice*, 4, 435-448.

Scherbaum, C. & Saari, L. (2011). Identified employee surveys: Where do we go from here? *Industrial and Organizational Psychology: Perspectives on Science and Practice*, 4, 487-493.

Scherbaum, C.A., Blanshteyn, V., Marshall, E., McCue, E.A., & Strauss, R. (2011). Examining the effects of stereotype threat on individual test taking behaviors. *Social Psychology of Education*, 14, 361-375.

Scherbaum, C.A., & Vancouver, J.B. (2010). If we produce discrepancies, then how: Testing a computational process model of positive goal revision. *Journal of Applied Social Psychology*, 40, 2201-2231.

Johnson, J., Steel, P., Scherbaum, C., Hoffman, C., Jeanneret, R.P., & Foster, J. (2010). Validation is like motor oil: Synthetic is better. *Industrial and Organizational Psychology: Perspectives on Science and Practice*, 3, 305-328.

Steel, P., Johnson, J., Jeanneret, R.P., Scherbaum, C., Hoffman, C., & Foster, J. (2010). At sea with synthetic validity. *Industrial and Organizational Psychology: Perspectives on Science and Practice*, 3, 371-383.

Scherbaum, C.A., & Ferreter, J.M. (2009). Estimating statistical power and sample size requirement for organizational research using hierarchical linear models. *Organizational Research Methods*, 12, 347-367.

- Article reprinted in Vogt's (Ed.) (2011) SAGE Quantitative Research Methods (vol. 4, pp. 127-150). This collection is designed to present a representative sample of the best quantitative methods articles that have appeared in SAGE journals.

Scherbaum, C.A., & Goldstein, H. (2008). Examining the relationship between differential item functioning and item difficulty. *Educational and Psychological Measurement*, 68, 537-553.

Scherbaum, C.A., Popovich, P.M., & Finlinson, S. (2008). Exploring factors related to energy conservation behaviors in organizations. *Journal of Applied Social Psychology*, 38, 818-835.

Vancouver, J.B., & Scherbaum, C.A. (2008). Do we self-regulate actions or perceptions? A test of two computational models. *Computational and Mathematical Organization Theory*, 14, 1-22.

Scherbaum C.A., Cohen-Charash, Y., & Kern, M. (2006). Measuring general self-efficacy: A comparison of three measures using item response theory. *Educational and Psychological Measurement*, 66, 1047-1063.

Scherbaum, C.A., Finlinson, S., Barden, K., & Tamanini, K. (2006). Applications of item response theory to measurement issues in leadership research. *Leadership Quarterly*, 17, 366-386.

Scherbaum, C. A. (2005). Synthetic validity: Past, present, and future. *Personnel Psychology*, 58, 481-515.

Scherbaum, C.A., Scherbaum, K.L., & Popovich, P.M. (2005). Predicting job-related expectancies and affective reactions to employees with disabilities from previous work experience. *Journal of Applied Social Psychology*, 35, 889-904.

Vancouver, J. B., Putka, D. J., & Scherbaum, C. A. (2005). Triangulating on the goal-level effect: Experimental, computational, and correlational analysis. *Organizational Research Methods*, 8, 100-127.

Popovich, P. M., Scherbaum, C. A., Scherbaum, K. L., & Polinko, N. (2003). The assessment of attitudes toward individuals with disabilities in the workplace. *Journal of Psychology*, 137, 163-177.

Vancouver, J. B., & Scherbaum, C. A. (2000). Automaticity, goals, and environment. *American Psychologist*, 55, 763-764.

Non-Peer Reviewed Publications (3)

Scherbaum, C. A. (2018). [Review of the Matrigma]. In J. F. Carlson, K. F. Geisinger, & J. L. Jonson (Eds.), *The twenty-fourth mental measurements yearbook* (pp. 413-414). Lincoln, NE: Buros Center for Testing.

Scherbaum, C. A. (2014). [Review of the Mechanic Evaluation Test—Forms A1R-C, B1-C, C1-C]. In J. F. Carlson, K. F. Geisinger, & J. L. Jonson (Eds.), *The nineteenth mental measurements yearbook* (pp. 413-414). Lincoln, NE: Buros Center for Testing.

Scherbaum, C. A. (2013). How 'Big' are SIOP's Data? *The Industrial and Organizational Psychologist*, 51, 28-31.

Book Chapters (19)

Scherbaum, C.A. & Shockley, K.M. (in press). A basic guide to statistical discovery: Planning and selecting statistical analyses. In F. Leong & J. Austin (Eds.), *The psychology research handbook: A guide for graduate students and research assistants* (3rd ed.). Thousand Oaks, CA: Sage.

Saari, L., & Scherbaum, C. (2020). Data Privacy and Ethical Considerations with Employee Surveys and Emerging Technologies (pp. 391-406). In B. Macey & A. Fink's (Eds.) *Employee Surveys and Sensing: Challenges and Opportunities*. American Psychological Association.

Chou, V. P., Omansky, R., Scherbaum, C. A., Yusko, K. P., & Goldstein, H. W. (2019). The use of specific cognitive abilities in the workplace. In D. McFarland (Ed.), *General and Specific Abilities*. Newcastle upon Tyne, UK: Cambridge Scholars Publishing.

Yusko, K., Aiken, J., Goldstein, H., Scherbaum, C. & Larson, E. (2018). Solving the "Quarterback Problem": Using Psychological Assessment to Improve Selection Decisions in Professional Sports. In R. Sims' (Ed.) *Human Resources Management Issues, Challenges and Trends: "Now and Around the Corner"*. Information Age Publishing.

Scherbaum, C.A., & Pesner, E. (2018). Power Analysis for Multilevel Research. In S. Humphrey & J. LeBreton's (Eds). *The Handbook for Multilevel Theory, Measurement, and Analysis*. American Psychological Association.

Larson, E., Yusko, K., Goldstein, H., Scherbaum, C., Aiken, J., and Oliver, L. (2018). Modernizing Intelligence in the Workplace: Recent Developments in Theory and Measurement of Intelligence at Work. In V. Zeigler and T. Shackelford (Eds.), *The Sage Handbook of Personality and Individual Differences: Applications of Personality and Individual Differences* (pg. 568-587). Thousand Oaks, CA: Sage Publications.

Scherbaum, C., DeNunzio, M., Oliveira, J. & Ignagni, M. (2017). Race and Cultural Differences on Predictors Commonly Used in Employee Selection and Assessment. In B. Passmore, H. Goldstein, & E. Pulakos' (Eds.) *The Handbook of the Psychology of Recruitment, Selection, and Retention* (pg. 400-421). Wiley-Blackwell.

Agnello, P., & Scherbaum, C. (2015). *Re-exploring the gender gap in mathematics: A within-person approach*. Advances in Psychology Research (vol 108, pp. 1-22). New York: Nova Publishers.

Scherbaum, C. Goldstein, H., Ryan, R., Agnello, P., Yusko, K., & Hanges, P. (2015). New Developments in Intelligence Theory and Assessment: Implications for Personnel Selection. In J. Oostrom & I. Nikolaou's (Eds.) *Employee Recruitment, Selection, and Assessment. Contemporary Issues for Theory and Practice*. London: Psychology Press-Taylor & Francis.

Scherbaum, C.A. & Saunderson, R. (2014). Using Big Data and Analytics to Create, Maintain, and Build Enterprise Engagement. *Enterprise Engagement Handbook* (pp. 215-223). New York: Enterprise Engagement Alliance.

Sabet, J., Scherbaum, C., & Goldstein, H. (2013). Examining the potential of neuropsychological intelligence tests for predicting academic performance and reducing racial/ethnic test scores differences. In F. Metzger's (Ed.) *Neuropsychology: New Research* (pp. 1-24). New York: Nova Publishers.

Breaux, P. & Scherbaum, C. (2013). Heroic-leadership teams: A militarily related team LMX Study. In G. Graen and J. Graen's (Ed.) *Management of team leadership in extreme contexts: Defending our homeland, protecting our first responders* (pp.1-9). Charlotte, NC: Information Age Publishing Inc.

Scherbaum, C.A., Putka, D.J., Naidoo, L.J., & Youssefnia, D. (2010). Key driver analyses: Current trends, problems, and alternative approaches. In S. Albrecht's (Ed.), *Handbook of employee engagement*. Edward-Elgar Publishing House: Camberley, UK.

Goldstein, H. W., Scherbaum, C. A., & Yusko, K. (2009). Adverse impact and measuring cognitive ability. In J. Outtz's (Ed.) *Adverse impact: Implications for organizational staffing and high stakes testing* (pp. 95-134). New York: Psychology Press.

Scherbaum, C. A., & Meade, A. W. (2009). Measurement in the organizational sciences. In D. Buchanan & A. Bryman (Eds.), *Handbook of organizational research methods* (pp. 636-653). London: Sage.

Naidoo, L.J., Scherbaum, C.A., & Goldstein, H.W. (2008). Examining the relative importance of leader-member exchange on group performance over time. In G. B. Graen and J. A. Graen (Eds.), *Knowledge Driven Corporation: A Discontinuous Model. LMX Leadership: The Series* (Vol 5, pp. 211-230). Charlotte, NC: Information Age Publishing Inc.

Scherbaum, C.A., Naidoo, L.J., & Ferreter, J.M. (2007). Examining component measures of team leader-member exchange (LMX-SLX) using item response theory. In G. Graen and J. Graen (Eds.), *New Multinational Network Sharing*. Charlotte, NC: Information Age Publishing.

Scherbaum, C.A. (2005). A basic guide to statistical discovery: Planning and selecting statistical analyses. In F. Leong & J. Austin (Eds.), *The psychology research handbook: A guide for graduate students and research assistants* (2nd ed., pp. 275-292). Thousand Oaks, CA: Sage.

Austin, J. T., Scherbaum, C. A., & Mahlman, R. A. (2002). History of research methods in industrial and organizational psychology: Measurement, design, analysis. In S. Rogelberg (Ed.), *Handbook of research methods in industrial and organizational psychology* (pp. 3-33). Oxford: Blackwell Publishers.

Peer Reviewed Presentations (120)

Cheban, Y., Kayga, L., Scherbaum, C., & Hanges, P. (2021, April). Opportunities in I-O research utilizing eye-tracking methodology. The 36th Annual Conference of the Society of Industrial Organizational Psychology. New Orleans, Louisiana.

Cheban, Y., Ray, E., & Scherbaum, C. (2021, April). Video Interviewing: A Best Practices Discussion. Panel discussion at the 36th Annual Meeting of the Society of Industrial and Organizational Psychology, New Orleans, LA.

Patel, K. & Scherbaum, C. (2021, April). Tweet Tweet Read All About It: The Impact of Social Media on Performance Appraisals. Poster presented at the 36th Annual Conference of Society for Industrial and Organizational Psychology, New Orleans, LA.

Pineault, L., Alenick, P., Dickson, M., Scherbaum, C., Alber, M., Crenshaw, J., & Bellenger, B. (2021, April). Race-based differences in the police candidate anxiety- interview performance relationship. In S. Howe's Investigating Discriminatory Behaviors in Employment Interviews. Symposium at the 36th annual conference of the Society for Industrial/Organizational Psychology, New Orleans, LA.

Scherbaum, C. (2021, April). Panelist in H. Kell's Non-G-Ocentric models of cognitive abilities

and their relevance to I-O psychology. Alternative session at the 36th annual conference of the Society for Industrial/Organizational Psychology, New Orleans, LA.

Yusko, K., Scherbaum, C., & Goldstein, B. (2021, April). Using Psychological Assessments to Predict Player Performance in the NFL. In E. Heggstad's (Chair) Talent Management in Elite Sports: Using an I/O Lens. Symposium conducted at the 36th Annual Conference of the Society for Industrial and Organizational Psychology, New Orleans, LA.

Kuzmich, I., & Scherbaum, C. (2020, April). *Re-examining the effect of mid-test warnings on faking on personality inventories*. Poster presented at the 35th Annual Conference of the Society for Industrial and Organizational Psychology, Austin, TX.

Natale, A., Patel, K., Scherbaum, C. A., Tumminia, A. (2020, April). *To Check or Not to Check?: Attention Checks and MTurker Attitudes & Behavior*. Poster presented at the 35th Annual Conference of the Society for Industrial and Organizational Psychology, Austin, TX.

Oliveira, J., Rutigliano, P., Scherbaum, C., & Saari, L. (2020, April). *Examining the Impact of Survey Identification on Response Behavior*. Poster presented at the 35th Annual Conference of the Society for Industrial and Organizational Psychology, Austin, TX.

Scherbaum, C. A. (2020, April). Panelist. In P. Agnello's *Synthetic Validity: An Authentic Solution to Applied Problems* [Session Cancelled Due to COVID-19]. Panel Discussion conducted at the 35th Annual Conference of the Society for Industrial and Organizational Psychology, Austin, TX.

Yu, S., Corpuz, C., Kui, V., & Scherbaum, C. (2020, August). *Lights, Cameras, Faking: Comparing Warning Deterrents to Prevent Faking*. Poster presented at the annual meeting of the American Psychological Association, Washington, D.C.

Chou, V. P. & Scherbaum, C. A. (2019, April). *Using Cognitive Pupillometry to Study Cognitive Processes and Abilities*. In C. A. Scherbaum & P. J. Hanges (Chairs), *In the Mind's Eye: Eye Tracking as a Tool for the Organizational Sciences*. Symposium conducted at the 34th Annual Conference of the Society for Industrial and Organizational Psychology, Washington, D.C.

Chou, V. P., Scherbaum, C. A., & Hanges, P. J. (2019, April). *A Neuroscience Method to Elucidate Sources of Score Differences on Ability Tests*. Poster session presented at the 34th Annual Conference of the Society for Industrial and Organizational Psychology, Washington, D.C.

Kato, A. E., & Scherbaum, C. A. (2019, April). *Exploring the relationship between cognitive ability tilt and job performance*. In H. J. Kell & S. Wee (Co-Chairs), *Very much more than g: Further evidence for the importance of specific abilities*. Symposium conducted at the 34th annual conference of the Society for Industrial and Organizational Psychology, National Harbor.

Kuzmich, I., & Scherbaum, C. (2019, April). *Using social-categorization theory and methods to study faking behavior*. Presented at the 34th annual conference of the Society for Industrial and Organizational Psychology, National Harbor, MD.

Larson, E., Chou, V., Lee, P., Scherbaum, C., Freed, S., Pineault, L., Keval, N., Dickson, M., Aiken, J., & Goldstein, H. (2019, April). *Generalizability theory estimates of interview reliability*. Poster presented at the 34th annual conference of the Society for Industrial and Organizational Psychology, National Harbor, MD.

Lee, P. & Scherbaum, C. (2019, May). *Profiles of Individual Performance Distributions and Their Relationship with Interdependent Team Performance*. Poster presented at the European Association of Work and Organizational Psychology annual congress, Turin, Italy.

Scherbaum, C. A., & Hanges, P.J. (Chairs) (2019, April). *In the mind's eye: Eye tracking as a tool for the organizational sciences*. Symposium conducted at the Society for Industrial and Organizational Psychology Convention, Washington, DC/National Harbor, MD.

Agnello, P., Scherbaum, C., Goldstein, H., & Yusko, K. (2018, April). *Reasoning with Pseudowords in a Cognitive Ability Context*. In J. Cottrell's What's New in Adverse Impact? Exploring Theory, Techniques, Test Types, and Tools. Session at the 33rd annual conference of the Society for Industrial and Organizational Psychology, Chicago.

Guzzo, R., Yusko, K., Goldstein, H., Scherbaum, C., Larson, E., Ryan, R., and Nalbantian, H. (2018, April). *Using Assessment to Predict Success in Sports: NFL Case Study and Panel Discussion*. Session at the 33rd annual conference of the Society for Industrial and Organizational Psychology, Chicago.

Scherbaum, C., Oliver, L., Yusko, K., Goldstein, H., Agnello, P., Stahl, W., Bellenger, B., Crenshaw, J., Dawson, T., Dickson, M., Aiken, J., & Larson, E. (2018, April). *Using Job Component Validity to Hire Quickly and at Low Cost under a Consent Decree*. Poster presented at the 33rd annual conference of the Society for Industrial and Organizational Psychology, Chicago.

Kato, A., Scherbaum, C., Dickson, M., Crenshaw, J., Bellenger, B., Beckman, S., Goldstein, H., & Yusko, K. (2018, April). *Examining Agreement in Job Analysis Ratings of Cognitive and Non-Cognitive KSAOs*. Poster presented at the 33rd annual conference of the Society for Industrial and Organizational Psychology, Chicago.

Scherbaum, C. (2018, April). Panelist in L. Saari's *Employee Surveys and New Technologies: Privacy and Ethical Issues*. Session at the 33rd annual conference of the Society for Industrial and Organizational Psychology, Chicago.

Lee, P., Aiken, J., Chen, T., Dickson, M., Hanges, P., & Scherbaum, C. (2018, April). *Re-examining the Perceived Migration of I-O Psychology to Business Schools*. Poster presented at the 33rd annual conference of the Society for Industrial and Organizational Psychology, Chicago.

Scherbaum, C. (2017, July). Panelist in M. Dickson's *From the extreme to the norm: Transferable learnings from challenging assessment situations*. Panel discussion at the annual conference of the International Personnel Assessment Council. Birmingham, AL.

Scherbaum, C., Yusko, K., Goldstein, H., Dickson, M., Dawson, T., Allman, R., Giles, K., Agnello, P., & Stahl, W. (2017, July). *Jefferson County Job Components Validity Study*. Paper presented at the annual conference of the International Personnel Assessment Council. Birmingham, AL.

Scherbaum, C., Goldstein, H., Yuskos, K., Hanges, P., Bellenger, B. (2017, July). *New Developments and Challenges in Cognitive Ability Assessment*. Symposium presented at the annual conference of the International Personnel Assessment Council. Birmingham, AL.

Nei, W., Scherbaum, C., & Velychko, G. (2017, May). *Training for success*. Poster presented at the International Convention of Psychological Science, Vienna.

Goldstein, H., Yuskos, K., Scherbaum, C., Larson, E., & Ryan, R. (2017, April). *Reducing Racial Differences on Intelligence Tests for Personnel Selection*. In K. LaPort's *Alternative Measures of g: Not your grandfather's cognitive tests*. Symposium at the 32nd annual conference of the Society for Industrial and Organizational Psychology, Orlando, FL.

Mitra, P., Park, J. & Scherbaum, C. (2017, April). *Role of the Veil and Target Ethnicity in Selection Decisions*. Poster presented at the 32nd annual conference of the Society for Industrial and Organizational Psychology, Orlando, FL.

Pesner, E. & Scherbaum (2017, April). *The Influence of Task Interdependency on Intraindividual Performance Variability*. Poster presented at the 32nd annual conference of the Society for Industrial and Organizational Psychology, Orlando, FL.

Scherbaum, C. (2017, April). Panelist in R. Williams' *Practical Guidance for Developing and Implementing Ideal Point Measurement Models*. Panel discussion at the 32nd annual conference of the Society for Industrial and Organizational Psychology, Orlando, FL.

Hayrapetyan, L., & Scherbaum, C. (2016, April). *Employee Environmentally Friendly Behaviors in and out of Organizations*. Poster presented at the 31st annual conference of the Society for Industrial and Organizational Psychology, Anaheim, CA.

Scherbaum, C. (2016, April). Discussant in P. Coyle's *Measuring Leadership and Followership: Clarifying constructs and items*. Symposium at the 31st annual conference of the Society for Industrial and Organizational Psychology, Anaheim, CA.

Scherbaum, C. (2016, April). Panelist in S. Murphy's *Transforming Big and Small Data to Big Insight*. Panel Discussion at the 31st annual conference of the Society for Industrial and Organizational Psychology, Anaheim, CA.

Wilson, N., Denese, N., & Scherbaum, C. (2016, May). *Using behavioral assessments to establish construct validity of a modern cognitive ability test*. Poster presented at the Annual Conference of the Association for Psychological Science, Chicago, IL.

Yusko, K., Scherbaum, C., & Ryan, R. (2016, April). *Intelligence as a predictor of NFL performance*, In P. Hanges' The Quarterback Problem: When Predicting Success is Difficult. Symposium at the 31st annual conference of the Society for Industrial and Organizational Psychology, Anaheim, CA.

Oliveira, J., & Scherbaum, C. (2015, May). *Moderating Effect of Job Type on Job Characteristic-Worker Outcome Relationships*. Poster presented at the 27th APS Annual Convention, New York.

Oliveira, J., & Scherbaum, C. (2015, August). Effect of Culture on Job Characteristic-Worker Outcome Relationships. Poster presented at the APA Annual Convention, Toronto.

Scherbaum, C. (2015, April). Panelist in H. Goldstein's *Consulting in High Stakes Scenarios: Lessons Learned*. Panel Discussion at the 30th annual conference of the Society for Industrial and Organizational Psychology, Philadelphia.

Scherbaum, C. (2015, April). Panelist in S. Weiner's *Big Data and Identified Employee Surveys: Ethical Issues and Actions*. Panel Discussion at the 30th annual conference of the Society for Industrial and Organizational Psychology, Philadelphia.

Scherbaum, C. (2015, April). Panelist in C. Scherbaum's *Executive Board Special Session: A Data-Driven Approach to Improving SIOP: Practicing What We Preach*. Panel Discussion at the 30th annual conference of the Society for Industrial and Organizational Psychology, Philadelphia.

Agnello, P. & Scherbaum, C. (2014, May). *Re-exploring the Gender Gap in Mathematics Using a Within-Person Approach*. Poster presented at the 29th annual conference of the Society for Industrial and Organizational Psychology, Honolulu.

Ignagni, M., Anderson, J., & Scherbaum, C. (2014, August). Beyond Mean Math Score Differences: Differential Item Functioning Within a Math Self-Concept Measure. Poster presented at the annual conference of the American Psychological Association, Washington D.C.

Mitra, P., Smith, C., & Scherbaum, C. (2014, May). *Female Managers: The Role of Implicit Attitudes and Organizational Climate*. Poster presented at the 29th annual conference of the Society for Industrial and Organizational Psychology, Honolulu.

Ryan, R., Rothstein, J., Goldstein, H., & Scherbaum, C. (2014, August). *Immigrant Status, Test Attitudes, and Cognitive Ability Test Performance*. Poster presented at the annual conference of the American Psychological Association.

Saunderson, R. & Scherbaum, C. (2014, May). *Examining the Impact of Manager Recognition Training on Unit Performance*. Poster presented at the 29th annual conference of the Society for Industrial and Organizational Psychology, Honolulu.

Scherbaum, C. (2014, May). Panelist in L. Saari's *Identified Employee Surveys: Complex Ethical Issues and Appropriate Actions*. Debate at the 29th annual conference of the Society for Industrial and Organizational Psychology, Honolulu.

Scherbaum, C. (2014, May). Discussant in B. Gladdis' *A Critical Review of Mechanical Turk as a Research Tool*. Symposium at the 29th annual conference of the Society for Industrial and Organizational Psychology, Honolulu.

Scherbaum, C. (2014, May). Future Directions for I/O research and practice using EEGs. In M.K. Ward's *Organizational Neuroscience: Using Electroencephalography (EEG) to Study I/O Topics*. Symposium presented at the 29th annual conference of the Society for Industrial and Organizational Psychology, Honolulu.

Scherbaum, C. (2014, July). Discussant in W. Reichman's *Organizational Success Through Survey Research*, Symposium presented at the International Congress of Applied Psychology, Paris.

Smith, C., Santuzzi, A., & Scherbaum, C. (2014, May). *Perceptions of Positive Personality in Task Placement: Does Race Matter?* Poster presented at the 29th annual conference of the Society for Industrial and Organizational Psychology, Honolulu.

Sywulak, L. Oliveira, J., Rothstein, J., Scherbaum, C., & Goldstein, H. (2014, August). *The role of cognitive style in performance on Raven's*. Poster presented at the annual conference of the American Psychological Association.

Youssefnia, D. & Scherbaum, C. (2014, May). Using Segmentation Analysis to Drive Talent Management and Leadership Development. In L. Bousman's *The Employee Segmentation Continuum: Creating Respondent Groups to Spur Action*. Symposium presented at the 29th annual conference of the Society for Industrial and Organizational Psychology, Honolulu.

Cohen-Charash, Y., Scherbaum, C. A., Kammeyer-Mueller, J. B., & Staw, B. M. (2013, August). *Mood and the market: Can investors' collective mood predict stock prices?* The Biannual Meeting of the International Society for Research on Emotions, Berkeley, CA.

Golubovich, J. & Scherbaum, C. (2013, April). *Impact of Test Design Features on Cognitive Ability Score Differences*. Poster presented at the 28th annual conference of the Society for Industrial and Organizational Psychology, Houston.

Mellert, L., Scherbaum, C., Wilke, B., & Froelich, J. (2013, April). *Change hurts: The relationship between organizational change and financial loss*. Poster presented at the 28th annual conference of the Society for Industrial and Organizational Psychology, Houston.

Scherbaum, C. (2013, April). Panelist in L. Saari's *Identified Employee Surveys: Potential Ethical Issues and Appropriate Actions*. Debate at the 28th annual conference of the Society for Industrial and Organizational Psychology, Houston.

Scherbaum, C. (2013, April). Discussant in M.K. Ward's *Organizational Neuroscience: Classic I-O Topics, Innovative Approaches*. Symposium presented at the 28th annual conference of the Society for Industrial and Organizational Psychology, Houston.

Youssefnia, D. & Scherbaum, C. (2013, October). *Big Data, Analytics and HR: What do they have in common?* Presentation at the Northwest Human Resource Management Association Annual Conference, Tacoma, WA.

Youssefnia, D. & Scherbaum, C. (2012, October). *Harnessing the power of text analytics to drive human capital*. Presentation at Text Analytics World, Boston.

Saunderson, R. & Scherbaum, C. (2012, October). *Improving Retail Branch Performance through Employee Recognition Optimization and Analytics*. Presentation at BAI Retail Delivery Conference, Washington, D.C.

Scherbaum, C. & Goldstein, H. (2012, August). *The Evolution of Cognitive Ability Testing: Getting past g*. Paper presented at the annual conference of the American Psychological Association, Orlando, FL

Agosta, J., Diaz, C., Mir, H., & Scherbaum, C. (2012, May). *Reducing Adverse Impact Using Modern Cognitive Ability Assessments*. Poster presented at the annual meeting of the Association for Psychological Science.

Berger, Y., Denunzio, M., & Scherbaum, C. (2012, August). *Examining Immigrant-Majority Mean Score Differences on Cognitive Ability Tests*. Poster presented at the annual conference of the American Psychological Association, Orlando, FL.

Blanshteyn, V. & Scherbaum, C. (2012, April). *An item stimulus approach to understanding sources of item difficulty*. Poster presented at the 27th annual conference of the Society for Industrial and Organizational Psychology, San Diego.

Sabet, F., Scherbaum, C., & Goldstein, H. (2012, April). *Examining Criterion-related Validity and Score Differences on Neuropsychological Intelligence Tests*. Poster presented at the 27th annual conference of the Society for Industrial and Organizational Psychology, San Diego.

Scherbaum, C. (2012, April). Moderator in P. Rutigliano's *Identified Surveys: Appropriate usage and practical professional guidelines*. Debate presented at the 27th annual conference of the Society for Industrial and Organizational Psychology, San Diego.

Scherbaum, C., Hanges, P., Yusko, K., Goldstein, H., & Ryan, R. (2012, April). *The Spearman Hypothesis Cannot Explain All Racial Score Differences*. In L. Hough's *Racial Differences in Personnel Selection: Complex Findings and Ongoing Research Symposium*. Symposium

presented at the 27th annual conference of the Society for Industrial and Organizational Psychology, San Diego.

Youssefnia, D. & Scherbaum, C. (2012, April). *Measuring Culture from the Tip of the Iceberg*. In J. Hudson's Balancing Rigor and Reality When Doing Organizational Culture Research. Symposium presented at the 27th annual conference of the Society for Industrial and Organizational Psychology, San Diego.

Yusko, K., Goldstein, H., Scherbaum, C., & Hanges, P. (2012, April). *Siena Reasoning Test: Measuring Intelligence with Reduced Adverse Impact*. Invited M. Scott Myers Award talk at the 27th annual conference of the Society for Industrial and Organizational Psychology, San Diego.

Mondo, L., Froelich, J., Youssefnia, D., & Scherbaum, C. (2011, April). *Group and Individual Level Characteristics in Predicting Survey Response Time*. Poster presented at the 26th annual conference of the Society for Industrial and Organizational Psychology, Chicago.

Golubovich, J. & Scherbaum, C. (2011, April). *Choosing Female Managers: What Attitudes Have to Do With It*. Poster presented at the 26th annual conference of the Society for Industrial and Organizational Psychology, Chicago.

Higgs, A., Sywulak, L., & Scherbaum, C. (2011, May). *Effects of Stereotype Threat on Alternative Cognitive Tests*. Poster presented at the Annual Convention of the American Psychological Association, Washington, DC

Goldstein, H.W., Scherbaum, C.A., Yusko, K.P., Ryan, R., & Hanges, P.J. (2010, December). *Testing for Cognitive Ability with Reduced Adverse Impact: Hiring in Work Organizations*. Presentation at the 11th Conference of the International Society for Intelligence Research, Washington, D.C.

Boyd, B. & Scherbaum, C. (2010, April). *Implicit job satisfaction*. Poster presented at the 25th annual conference of the Society for Industrial and Organizational Psychology, Atlanta.

Scherbaum, C. (2010, April). Panelist in L. Saari's *Identified Employee Surveys: Pros, Cons, What We Know/Don't Know*. Debate presented at the 25th annual conference of the Society for Industrial and Organizational Psychology, Atlanta.

Pascall-Gonzalez, R. Scherbaum, C., Ferreter, J., & Golubovich, J. (2010, April). *Examining Subgroup Differences on Cognitive Tests Using Mixed-measurement IRT Models*. Symposium presented at the 25th annual conference of the Society for Industrial and Organizational Psychology, Atlanta.

Scherbaum, C. (2010, August). Discussant in S. Ashworth's *A long-term implementation of job component validity: A 10-year follow-up*. Symposium presented at the annual conference of the American Psychological Association, San Diego.

Fisher, D. & Scherbaum, C. (2009, November). *How leadership judgment impacts performance:*

A practical guide for consulting psychologists. Paper presented at the annual convention of the Illinois Psychological Association.

Fyman, J. & Scherbaum, C.A. (2009, April). *Examining the Factor Structure of Team-Member Exchange*. Poster presented at the 24th annual conference of the Society for Industrial and Organizational Psychology, New Orleans.

Naidoo, L.J., Scherbaum, C.A., & Goldstein, H.W. (2009, April). *A Longitudinal Examination of LMX, Ability, Differentiation and Team Performance*. Poster presented at the 24th annual conference of the Society for Industrial and Organizational Psychology, New Orleans.

Scherbaum, C.A. (2009, April). Panel member in C. Scherbaum & P. Steel's *Synthetic Validity: Practical Questions and Answers*. Panel Discussion at the 24th annual conference of the Society for Industrial and Organizational Psychology, New Orleans.

Blanshteyn, V., Scherbaum, C.A., Marshall, E., McCue, E.A., & Strauss, R. (2008, April). *Examining the Effects of Stereotype Threat on Individual Test Taking Behaviors*. Poster presented at the 23rd annual conference of the Society for Industrial and Organizational Psychology, San Francisco.

Cohen-Charash, Y., Erez, M., & Scherbaum, C. (2008, April). *Firgun – Being Happy for another Person's Good Fortune*. In Y. Cohen-Charash, M. Erez, M., & C. Scherbaum's (Chairs) When Good Things Happen to Others: Envy and Firgun Reactions symposium at the 23rd annual conference of the Society for Industrial and Organizational Psychology, San Francisco.

Ferreter, J.M., Goldstein, H.W., Scherbaum, C.A., & Yusko, K.P. (2008, April). *Reducing Adverse Impact using a Nontraditional Cognitive Ability Assessment*. Poster presented at the 23rd annual conference of the Society for Industrial and Organizational Psychology, San Francisco.

Scherbaum, C. A. (2008, August). Discussant in J. Foster's *Synthetic validity: New directions and old questions answered*. Symposium presented at the annual meeting of the Academy of Management, Anaheim, CA.

Boyd, B. & Scherbaum, C. (2007, April). *Examining Implicit and Explicit Attitudes Towards Female Managers*. Poster presented at the 22nd annual conference of the Society for Industrial and Organizational Psychology, New York.

Kern, M. & Scherbaum, C. (2007, April). *Measuring Goal Commitment: A Comparison of Two Measures Using Item Response Theory*. Poster presented at the 22nd annual conference of the Society for Industrial and Organizational Psychology, New York.

Scherbaum, C.A. & Andreoli, N. (2007, May). *Individual difference variables and perceived fakability of the IPIP*. Poster presented at the Annual Conference of the American Psychological Society, Washington, D.C.

Scherbaum, C. & Black, J. (2007, April). *Financial and Managerial Determinants of Employee Engagement*. Paper submitted in C. Scherbaum & J. Black's (Chairs) Financial and managerial determinants of engagement symposium to the 22nd annual conference of the Society for Industrial and Organizational Psychology, New York.

Thompson, C. A., Martin, M., Poelmans, S., & Scherbaum, C. (2007). *Work-family Culture and Policies: Evidence from Spain*. Paper presented at the 2007 International Conference on Work and Family, July, Barcelona, Spain.

Ferreter, J.M., & Scherbaum, C.A. (2006, August). *A mixed measurement model analysis of the importance of intrinsic and extrinsic work rewards across cultures*. Interactive poster to be presented at the 48th Meeting of the Academy of International Business, Beijing, China.

Ferreter, J.M., Scherbaum, C.A., & Kern, M.J. (2006, May). *Examining faking on personality inventories using unfolding IRT models*. Poster to be presented at the 21st annual conference of the Society for Industrial and Organizational Psychology, Dallas, TX.

Scherbaum, C.A., & Fyman, J. (2006, May). *Influence of beliefs about team personality on team performance ratings*. Poster to be presented at the 21st annual conference of the Society for Industrial and Organizational Psychology, Dallas, TX.

Scherbaum, C., Goldstein, H. & Hayrapetyan, L. (2006, May). *Examining the relationship between differential item functioning and item difficulty*. Poster to be presented at the 21st annual conference of the Society for Industrial and Organizational Psychology, Dallas, TX.

Andreoli, N., & Scherbaum, C.A. (2005, August). *Perceived job relevance of the international personality item pool*. Poster presented at the annual conference of the American Psychological Association, Washington, D.C.

Brennan, A. & Scherbaum, C. A. (2005, June). *Item response theory: Applications and opportunities for I-O psychology*. Paper presented in F. Chiochio's (Chair), Is there a better way?: Examining a few different methods that can help generate new knowledge in I-O Psychology at the 66th conference of the Canadian Psychological Association, Montreal, Canada.

Cohen-Charash, Y., Scherbaum, C. A., Erez, M., & Bavli, K. (2005, May). *I am so happy for you: Firgun in organizations*. Paper presented at the annual meeting of the Role of Emotions in Organizational Life, Toronto, Canada.

Ferreter, J. M. & Scherbaum, C. A. (2005, August). *An examination of the measurement equivalence of importance ratings of intrinsic and extrinsic work rewards*. Poster presented at the annual meeting of the Academy of Management, Honolulu, HI.

Offenstein, J., Cohen-Charash, Y., & Scherbaum, C. A. (2005, August). *The effects of unfavorable outcomes and procedural justice on cognitive appraisals and emotions: An experimental study*. Paper presented at the annual meeting of the Academy of Management, Honolulu, HI.

Scherbaum C.A., Cohen-Charash, Y., & Kern, M. (2005, April). *Measuring general self-efficacy: A comparison of three measures using IRT*. Poster presented at the 20th annual conference of the Society for Industrial and Organizational Psychology, Los Angeles, CA.

Scherbaum, C.A., Yusko, K., Goldstein, H., & Kern, M. (2005, April). *Differential person functioning related to biodata item attributes*. Poster presented at the 20th annual conference of the Society for Industrial and Organizational Psychology, Los Angeles, CA.

Staw, B. M., Cohen-Charash, Y., & Scherbaum, C. A. (2005, June). *Emotions and the stock market*. Paper presented at the Affect and Emotions in Organizational Behavior Conference, Rotterdam, Holland.

Thomas, E., & Scherbaum, C. A. (2004, June). *The influence of implicit theories of personality on team performance ratings*. Poster presented at the 15th annual conference of the American Psychological Society, Chicago, IL.

Scherbaum, C. A. (2003, April). Panel discussant in J. B. Vancouver's (Chair) "*Computational modeling of dynamic organizational phenomenon*," roundtable session at the 18th annual conference of Society for Industrial and Organizational Psychology, Orlando, FL.

Scherbaum, C. A., Finlinson, S., & Vancouver, J. B. (2003, April). *Applying computational and multilevel modeling to Ackerman's skill acquisition model*. Poster presented at the 18th annual conference of the Society for Industrial and Organizational Psychology, Orlando, FL.

Scherbaum, C. A., Scherbaum, K. L., & Popovich, P. M. (2003, June). *Development and validation of the attitudes toward employees with disabilities scale*. Poster presented at the 15th annual conference of the American Psychological Society, Atlanta, GA.

Scherbaum, K. L., Scherbaum, C. A., & Popovich, P. M. (2003, June). *Sex Differences in perceptions of same-sex and opposite-sex sexual harassment*. Poster presented at the 15th annual conference of the American Psychological Society, Atlanta, GA.

Popovich, P. M., Finlinson, S., Scherbaum, C. A., Wilson, S., Hoffer, K., & Sinozich, A. (2002, April). *Exploring factors related to energy conservation behaviors in organizations*. Poster presented at the 17th annual conference of the Society for Industrial and Organizational Psychology, Toronto, Canada.

Popovich, P. M., Finlinson, S., Scherbaum, C. A., Wilson, S., Hoffer, K., & Sinozich, A. (2002, August). *Organizational energy conservation: assessing knowledge, attitudes, social norms, and behaviors*. Poster presented at the annual conference of the American Psychological Association, Chicago, IL.

Scherbaum, C. A., & Vancouver, J. B. (2002, April). *Testing two explanations for goal-setting effects: A persistent question*. Poster presented at the 17th annual conference of the Society for Industrial and Organizational Psychology, Toronto, Canada.

Scherbaum, C. A., & Vancouver, J. B. (2002, April). *Testing a computational goal-discrepancy reducing model of discrepancy production*. In J. Vancouver (Chair), Goal perception discrepancy production: Current theoretical and practical issues. Symposium paper presented at the 17th annual conference of the Society for Industrial and Organizational Psychology, Toronto, Canada.

Scherbaum, C. A., Scherbaum, K. L., & Popovich, P.M. (2001, May). *The reasonableness of accommodations for disabled workers: Perceptions of accommodations among college students*. Poster presented at the 73rd Midwestern Psychological Association convention, Chicago, IL.

Scherbaum, C. A., Scherbaum, K. L., Tischner, E., & Popovich, P. M. (2001, April). *Predicting job-related expectancies of disabled employees from previous work experience*. Poster presented at the 16th annual conference of the Society for Industrial and Organizational Psychology, San Diego, CA.

Larrimer, K. A., Scherbaum, C. A., & Popovich, P. M. (2000, June). *Attitudes towards the Americans with Disabilities Act and reasonable accommodation*. Poster presented at the 12th annual conference of the American Psychological Society, Miami, FL.

Popovich, P. M., Polinko, N., Larrimer, K. A., & Scherbaum, C. A. (2000, May). *The Americans with Disabilities Act and reasonable accommodation: Beliefs, affect, and behaviors*. Poster presented at the 72nd Midwestern Psychological Association convention, Chicago, IL.

Scherbaum, C. A., & Vancouver, J. B. (2000, June). *Discrepancy creation from discrepancy reduction: A working model*. Poster presented at the 12th annual conference of the American Psychological Society, Miami, FL.

Vancouver, J. B., Putka, D. J., & Scherbaum, C. A. (2000, August). *How control theory accounts for goal-setting: An empirical investigation*. Paper presented at the Annual Conference of the Academy of Management, Toronto, Canada.

Zollo, J. S., Scherbaum, C. A., & Vancouver, J. B. (1999, May). *Goal setting in perfect markets*. Poster presented at the 71st Midwestern Psychological Association convention, Chicago, IL.

Invited Presentations (28)

Goldstein, H., Yusko, K., Scherbaum, C., & Larson, E. (2021, February). *Assessing and Developing Talent: Lessons Learned from the NFL Project*. Invited talk at the Metropolitan New York Association for Applied Psychology.

Yusko, K., Goldstein, H., Scherbaum, C., & Larson, E. (2020, October). *Modern approaches to the assessment of cognitive ability*. Best Practices in Modernizing Assessments sponsored by the Office of Personnel Management and Office of Management and Budget.

Scherbaum, C., (2020, September). *Psychological Perspectives on Retaliation: Potential Causes and Solutions*. EEOC Technical Assistance Program Seminar – New York.

Scherbaum, C., Goldstein, H., & Yusko, K. (2019, October). *Using Psychological Assessments to Predict Player Performance in the NFL*. Society for Industrial and Organizational Psychology's Leading Edge Consortium, Atlanta.

Yusko, K., Goldstein, H., & Scherbaum, C. (2019, July). *Modern approaches to the assessment of cognitive abilities*. Presentation at the annual meeting of the International Personnel Assessment Council. Minneapolis, MN.

Yusko, K., Goldstein, H., & Scherbaum, C. (2019, June). *Moneyball Plus: Predicting Player Performance Using Psychological Assessments in Sports*. Presentation at the KPMG Sports Analytics World Series. Amsterdam.

Trindel, K. & Scherbaum, C. (2019, March). *Modern approaches to assessment for employment selection*. Featured Speaker Presentation at the annual meeting of the Association of Test Publishers. Orlando, FL.

Scherbaum, C. (2018, November). *Assessment Driven Managerial Development: Personalizing Micro Learning for Macro Results*. HRO Today Forum – EMEA. Amsterdam.

Scherbaum, C., (2018, June). *Psychological Perspectives on Retaliation: Potential Causes and Solutions*. EEOC Technical Assistance Program Seminar – New York.

Scherbaum, C. (2018, May). *Assessment Driven Managerial Development: Personalizing Micro Learning for Macro Results*. HRO Today Forum – North America. Washington, D.C.

Yusko, K., Goldstein, H., & Scherbaum, C. (2018, October). *Using Data Analytics to Identify & Hire Elite Performers in the Workplace—Lessons Learned from the NFL Combine*. Texata Summit. Austin, TX.

Yusko, K., Goldstein, H., & Scherbaum, C. (2018, March). *Moneyball Plus Predicting Player Performance Using Psychological Assessment: A Comparison Across the Major Sports*. MIT Sloan Sports Analytics Conference. Boston, MA.

Scherbaum, C. (2017, May). *Leveraging Analytics and Leadership Development to Drive Engagement Creation and Improve Business Performance*. HRO Today Forum – North America. Chicago, IL.

Scherbaum, C. (2017, November). *Celebrating Employees!: Best Practices in Recognition*. HRO Today Forum – EMEA. Dublin, Ireland.

Yusko, K., Scherbaum, C., & Goldstein, H. (2017, March). *NFL Player Assessment Test: Using Psychological Tests to Predict Player Performance in the NFL*. MIT Sloan Sports Analytics Conference. Boston, MA. https://youtu.be/40NV3_u9tYY

Scherbaum, C. (2016, March). *New Developments in Intelligence*. Invited talk at Wayne State University.

Scherbaum, C. (2016, April). *The New Frontier of Human Capital Analytics*. Enterprise Engagement Alliance Forum. Orlando, FL.

Scherbaum, C. (2016, November). *Leveraging Analytics and Leadership Development to Drive Engagement Creation and Improve Business Performance*. HRO Today Forum – EMEA. Edinburgh, Scotland.

Scherbaum, C. (2015, June). *Rethinking Intelligence: Conceptualization, Use, and Measurement*. Invited talk at the Metropolitan New York Association for Applied Psychology.

Scherbaum, C. (2015, May). *Expert Panel Discussion: Beyond the Basics – Creating Truly Healthy Office Environments*. Invited Panel Discussion at the 2015 WorkTech Conference, New York. <https://vimeo.com/channels/worktechtv/129122499>

Scherbaum, C. (2014, April). *Big Data and analytics: Unleashing the Potential of Enterprise Engagement*. Enterprise Engagement Alliance Forum. Memphis, TN.

Scherbaum, C.A. (2010, August). *Integrity testing as a strategy for reducing counter-productive work behaviors*. Invited talk to the Singapore Psychological Society, Singapore.

Scherbaum, C.A. (2009, November). *Synthetic validity: An introduction to useful, but unused approach to establishing validity evidence*. Invited talk at the Fall conference of Mid-Atlantic Personnel Assessment Consortium, Albany, NY.

Scherbaum, C.A. (2009, April). *What roles do employee honesty and integrity play within the human factor concept?* Invited talk at Risk Talk series of the Swiss Re Centre for Global Dialogue, Zurich.

Scherbaum, C.A. (2007, October). *Introduction to techniques for detecting faking on non-cognitive employment measures*. Invited talk at the Fall conference of Mid-Atlantic Personnel Assessment Consortium, Albany, NY.

Scherbaum, C.A. (2007, May). *Applications of item response theory to personnel assessment: Introduction and overview*. Invited talk at the spring conference of Mid-Atlantic Personnel Assessment Consortium, Harrisburg, PA.

Scherbaum, C.A. (2006, January). *Applications of item response theory to patient-reported data on health outcomes and behavior*. Invited talk at the National Development Research Institute, New York, NY.

Scherbaum, C.A. (2004, April). *Assessment and evaluation: Basic concepts and principles*. Presentation at the 7th annual Baruch College Teaching and Technology Conference, New York, NY.

Manuscripts, Chapters, and Books in Review & Preparation

Goldstein, H., Scherbaum, C., Larson, E., & Yusko, K. *Developing a Next Generation Entry-Level Police Test: Evolving Beyond the Traditional Assessment Approach*. In review for the special issue on police reform at Personnel Assessments and Decisions.

Goldstein, H., Scherbaum, C., Larson, E., & Yusko, K. *Reducing Black-White Racial Differences on Intelligence Tests in Personnel Selection*. In review for the special issue on the pandemic of racism at Journal of Business and Psychology.

Pineault, L., Alenick, P., Dickson, M., Scherbaum, C., Alber, M., Crenshaw, J. & Bellenger, B. *Too stressed to impress: An examination of race-based differences in the relationship between police candidate anxiety and interview performance*. In review for the special issue on police reform at Personnel Assessments and Decisions.

Scherbaum, C., Naidoo, L., & Saunderson, R. *The Impact of Manager Recognition Training on Performance: A Quasi-Experimental Field Study*. In review at the Leadership & Organization Development Journal.

Scherbaum, C., Kell, H., Goldstein, H., Wee, S., Lang, J., Bipp, T., Yusko, K., & Larson, E. Cognitive abilities and the modern world of work. Invited book by the International Testing Commission. Publisher – Cambridge Press. In preparation.

Scherbaum, C., Goldstein, H., Cheban, Y., Larson, E., & Yusko, K. Advances in cognitive ability assessment to mitigate group differences. Invited Chapter in T. Kantrowitz, J. Scott, & D. Reynolds (Eds.), *Talent Assessment Innovations and Trends*. Oxford University Press.

Chou, V., Scherbaum, C., & Hanges, P. *A Neuroscience Method to Elucidate Sources of Score Differences on Ability Tests*. Manuscript in preparation.

Scherbaum, C.A., Pascall-Gonzales, R., Ferreter, J.M., Goldstein, H.W., & Yusko, K. *Examining Group Score Differences on Cognitive Ability Tests using Mixed-Measurement IRT Models*. Manuscript in preparation.

Kato, A. & Scherbaum, C. *Exploring the Relationship between Cognitive Ability Tilt and Job Performance*. Manuscript in preparation.

Kato, A., Scherbaum, C., Dickson, M., Crenshaw, J., Bellenger, B., Goldstein, H., & Yusko, K. *Examining Source Differences in Job Analysis Ratings of Cognitive and Non-Cognitive Worker Attributes*. Manuscript in preparation.

Larson, E., Chou, V., Lee, P., Scherbaum, C., Dickson, M., Aiken, J., Freed, S., & Goldstein, H. *Generalizability Theory Estimates of Interview Reliability*. Manuscript in preparation.

Scherbaum, C.A., Yusko, K., Goldstein, H., & Kern, M. *Differential responding to biodata items as a function of item attributes: The differential person functioning approach*. Manuscript in preparation.

Goldstein, H, Yusko, K., Scherbaum, C.A., & Larson, E. *Examining the predictive validity and adverse impact of modern cognitive abilities tests*. Manuscript in preparation.

Grant Funding

- The Influence of Implicit Theories about Team Personality Characteristics on Ratings of Team Performance. *PSC-CUNY 35*, 2004-2005, PI (\$4,480).
- Differential item functioning and item properties of standardized cognitive tests. *Eugene M. Lang Fellowship Program*, 2005-2006, PI (\$7,000).
- Detecting response distortion on non-cognitive predictors of job performance. *City University of New York Research Equipment Grants Program*, 2004, PI (\$5,450)
- Differential item functioning and item properties of standardized cognitive tests. *PSC-CUNY 36*, 2005-2006, PI (\$3,816).
- Differential item functioning and item properties of standardized cognitive tests (2005-2006). *Wonderlic, Inc.'s Research Donation Program*, PI (\$2,000)
- Examining the Effects of Stereotype Threat on Individual Test Taking Behaviors. *PSC-CUNY 37*, 2006-2007, PI (\$3,664)
- Basic and Applied Dimensions of Scientific Psychology: Research Experience for Undergraduates at Baruch College – *CUNY National Science Foundation*, PI, 2007-2010 (\$269,787)
- Examining the Impact of Explicit and Implicit Attitudes towards Female Managers. *PSC-CUNY 39*, 2008-2009, PI (\$3,285).
- Improving Graduate Business School Admissions: Supplementing the GMAT with Alternative Predictors. *MERInstitute of the Graduate Management Admissions Council*, PI, 2010-2011 (\$100,000).
- Basic and Applied Dimensions of Scientific Psychology: Research Experience for Undergraduates at Baruch College – *CUNY National Science Foundation*, co-PI, 2010-2013 (\$282,021)
- Neurocognitive measures of employee engagement. *PSC-CUNY 47*, 2015-2016, PI (\$3,500).
- Basic and Applied Dimensions of Scientific Psychology: Research Experience for Undergraduates at Baruch College – *CUNY National Science Foundation*, PI, 2019-2022 (\$335,000)

Awards

- 2021 M. Scott Myers Award for Applied Research in the Workplace from the Society for Industrial and Organizational Psychology. Project title: *Development and implementation of the National Football League Player Assessment Test*.
- 2021 Human Resource Management Impact Award from the Society for Human Resource Management and the Society for Industrial and Organizational Psychology. Project Title: *Merck General Management Acceleration Program*.
- 2018 Adverse Impact Reduction Research Initiative and Action (AIRRIA) Research Grant from the Society for Industrial and Organizational Psychology (Project title: *Using Neurocognitive Methods to Understand Sources of Adverse Impact on Cognitive Ability Tests*).

- 2017 Innovation in Assessment Award from the International Personnel Assessment Council (Project title: *Jefferson County and Siena Consulting Job Components Validity Study*).
- 2017 HRO Today Global Forum – HR Global Superstar.
- 2017 HRO Today – Tek Tonic Award.
- 2011 M. Scott Myers Award for Applied Research in the Workplace from the Society for Industrial and Organizational Psychology. Project title: *Development and Implementation of the Siena Reasoning Test*.
- 2011 Innovation Award from the International Personnel Assessment Council (Yusko, Goldstein, Scherbaum, and Hanges; Project title: *Siena Reasoning Test*).
- Mrs. Giles Whiting Foundation Fellowship, 2005 (\$2000 to support research activities)
- Honorable mention, the Organization Development Institute's 2002 Outstanding O.D. Project of the Year Worldwide. Project title: *Exploring Factors Related to Energy Conservation Behaviors in Organizations*
- Ohio University Doctoral Fellow, 2001-2003
- Ohio University College of Arts and Sciences Outstanding Graduate Student Teaching Award, 2001-2002

Academic Experience

August 2017-Present	Professor, Department of Psychology, <i>Baruch College, City University of New York</i> , New York, NY <i>Undergraduate courses</i> : Introduction to Psychology, Industrial and Organizational Psychology, Advanced Personnel Psychology, Practicum in Lab and Research Methods <i>Master's Courses</i> : Research Methodology in the Design of Psychological Research, Psychometric Methods, Quantitative Methods for Business Decisions <i>International Executive Master's Courses (Taiwan and Singapore)</i> : Psychological Perspectives on International Human Resource Management, Quantitative Methods for Business Decisions <i>Ph.D. Courses</i> : Advanced Psychometrics, Research Methods, Performance Management, Organizational Psychology
September 2007-August 2017	Associate Professor, Department of Psychology, <i>Baruch College, City University of New York</i> , New York, NY
September 2003-August 2007	Assistant Professor, Department of Psychology, <i>Baruch College, City University of New York</i> , New York, NY
Fall 2000-Spring 2003	Instructor, <i>Ohio University, Department of Psychology</i> , Athens, OH <i>Undergraduate courses</i> : Statistics for the Behavioral Sciences, Introduction to Psychology, Survey of Industrial and Organizational Psychology
Fall 2002	Instructor, <i>Ohio University and Hong Kong Baptist University, School of Continuing Education</i> , Hong Kong <i>Undergraduate courses</i> : Introduction to psychology, Survey of Industrial and Organizational Psychology

Consulting Experience

November 2008-Present

Owner, *Cielo Management Consulting, LLC*, New York, NY
 Cielo Management Consulting provides human resource management consulting services in the areas of selection and assessment, performance management, employment discrimination litigation support, human capital research, employee surveying, and statistical analysis. A sample of clients include:

Morgan Stanley	UNICEF
National Football League	Pennsylvania Power & Light
Hilton Worldwide	Chicago Public Schools
Rideau Recognition Solutions	NYC Department of Education
Bristol, Myers, Squibb	City of Dayton, OH
Merrill Lynch	Royal Bank of Canada
Accenture	The Medicine's Company
National Foreign Trade Council	Intuit
Glint/LinkedIn	Wendy's
Owens Corning	Jefferson County, AL
Prudential	Intel
Port of Seattle	Merrill Technologies
City of Stamford, CT	City of Akron, OH
United Nations	Engage2Excel

Expert witness consultation:

- 2005-2011 Ahroner v. Israel Discount Bank. No. 602192/03 (DNY). Plaintiff. Issued report, conducted statistical analyses on performance appraisal systems and termination decisions, reviewed documents.
- 2007 NTEU and FDIC Arbitration, Case# 1276. Plaintiff. Plaintiff. Provided advice to NTEU.
- 2011-2012 United States, The Vulcan Society, et al. v. City of 2018-present New York and Uniformed Firefighters Association of Greater New York. 07-CV-2067 (NGG) (RLM) Plaintiff. Provided advice to the Vulcan Society on new selection tests and validation studies.
- 2009-2015 Morgan Stanley Smith Barney Consolidated Agreement (Formerly Amochaev v. Citigroup Global Markets-Smith Barney and Augst-Johnson v. Morgan Stanley). Case No. 1:06-cv-01142 (RWR) and Case No. C-05-1298 PJH (N.D. Cal). Neutral for both parties. Provided advice to Smith Barney and Morgan Stanley, reviewed change initiatives, conducted statistical analyses on selection tests.
- 2009-2015 Jaffe v. Morgan Stanley Smith Barney (Formerly Jaffe v. Morgan Stanley). Case No. C-06-3903 (THE).

Neutral for both parties. Provided advice to Smith Barney and Morgan Stanley, reviewed change initiatives, conducted statistical analyses on selection tests.

- 2013 Emmer v. Trustees of Columbia University. No. 151510/2013 (DNY)
Plaintiff. Issued report.

- 2012-2019 United States v. City of Dayton, Civil Action No. 3:08-cv-348 (TMR)
Defendant. Provided advice to the City of Dayton, conducted test development, conducted validation studies, and conducted adverse impact analyses.

- 2014-2016 Calibuso v. Bank of America, et al, Case No: 2:10-CV-01413(PKC)(AKT).
Defendant. Conduct a study of financial advisor teaming within U.S. Wealth Management for the purpose of generating recommendations to facilitate improved teaming arrangements for women financial advisors.

- 2018 United States v. Buffalo, et al, W.D.N.Y. 74-CV-195C
Plaintiff, Lawyers Committee for Civil Rights. Providing advice to the Lawyers Committee on test development, validation, and method of use.

- 2019-2020 United States v. Rhode Island Department of Corrections, Civil Action No.: 1:14-cv-78(S).
Plaintiff. Providing advice to the United States Department of Justice on test development and validation. Reviewing defendant's tests, validation, and adverse impact results as part of a consent decree settlement.

- 2019-Present Simpson et al. v. Cook County Sheriff Department, Case No. 18 C 553
Plaintiff. Conducted adverse impact analyses, reviewed defendant's selection systems. Issued reports and provided deposition testimony.

- 2019-Present Richardson et al. v. City of New York. 17-CV-9447 (JPO).
Plaintiff. Conducted adverse impact analyses on compensation, hiring, and promotions systems for FDNY civilian jobs. Issued reports and provided deposition testimony.

- 2019-Present Chalmers, et al. v. City of New York. Case No. 1:20-cv-03389-AT
Plaintiff. Conducting adverse impact analyses on compensation.

- 2020-Present United States et al. v. Consolidated City of Jacksonville, Jacksonville Association of Fire Fighters, Local 122, IAFF, Case No. 3:12-cv-451-J-32MCR.
Plaintiff. Provided advice to the United States Department of Justice on test development and validation. Reviewing defendant's tests, validation, and adverse impact results as part of a consent decree settlement.

- 2020-Present United States v. Baltimore County, Maryland, Civil Action No. 1:19-cv-02465.

Plaintiff. Provided advice to the United States Department of Justice on test development and validation. Reviewing defendant's tests, validation, and adverse impact results as part of a consent decree settlement.

- 2020-Present EEOC v. Schuster, Co., Civil Action No: 5:19-cv-4063
Plaintiff. Provided advice to the EEOC on test development and validation. Issued report and provided deposition testimony.
- 2020-Present EEOC v. Stan Koch & Sons Trucking, Civil Action No: 0:19-cv-02148
Plaintiff. Provided advice to the EEOC on test development and validation. Issued report and provided deposition testimony.
- 2020-Present Harriott et al. v. Washington Metropolitan Area Transit Authority, Civil Action No. 19-cv-01656-TJK (D.C.)
Plaintiff. Conducted adverse impact analyses on termination decisions. Issued report and provided deposition testimony.
- 2021-Present United States v. City of Cleveland Fire Department
Plaintiff. Advising the United States Department of Justice on their investigation of the entry-level and promotional selection procedures.
- 2021-Present United States v. City of Durham Department
Plaintiff. Advising the United States Department of Justice on their investigation of the entry-level selection procedures.
- 2021-Present United States v. City of Fayetteville Fire Department
Plaintiff. Advising the United States Department of Justice on their investigation of the entry-level selection procedures.
- 2021-Present United States v. Charles County, MD Sheriff's Office
Plaintiff. Advising the United States Department of Justice on their investigation of the entry-level selection procedures.

Expert Advisory Panels:

- 2013-2015 United States Department of Labor. Evaluating the Accessibility of American Job Centers for People with Disabilities.

Other Consulting Positions:

- August 2007-December 2015 Research and Analytics Advisor, *Critical Metrics*, New York, NY
Design and execute custom research and analytics for employee and customer research.
- August 2007-January 2014 Research and Analytics Advisor, *Fisher Rock Consulting*, New York, NY
Developed and managed research projects examining the operations of global mobility programs, human capital models, employee engagement, test validity, and performance management systems.

March 2006-January 2008 Consultant, *Sirota Survey Intelligence*, New York, NY
Conducted statistical analyses and project management of studies examining the relationships between human resource activities and financial and market performance of organizations.

January 2005-August 2005 Consultant, *Kognito Solutions*, New York, NY
Designed and conducted a program evaluation of computer-based of financial literacy tutorials, conducted review of current and existing products, advised on the design of program assessments.

May 2001-August 2001 Consultant, *Ohio University and Vestar, Inc.*, Athens, OH
Conducted focus groups, developed a survey-based intervention for Ohio University's energy conservation campaign, and conducted the follow-up evaluation of the intervention.

Work Experience

June 1998-August 1998 Lead Personnel Records Technician, *Washington Mutual, HR Operations Department*, Seattle, WA
Supervised six employees in the processing of new employees into the payroll system. Resolved problems and discrepancies for managers, recruiters, and new employees. Verified and audited records, and regulated workflow. Trained employees to use PeopleSoft and Excel.

January 1998-May 1998 Employment Assistant, *Washington Mutual, Employment Department*, Seattle, WA
Assisted recruiters and managers with staffing and recruitment policies and procedures. Audited job files for compliance with OFCCP and EEOC regulations. Maintained national staffing reports, opened and closed staffing requisitions, and trained new employees. Received advanced training in Excel and PeopleSoft.

August 1997-January 1998 Human Resource Intern, *Prudential Preferred Financial Services*, Seattle, WA
Assisted with the recruitment of new agents, conducted individual and group interviews, administered selection tests, and conducted employee surveys.

Professional Activities

2020-Present Awards Committee, SIOP Anti-Racism Grant and Zedeck-Jacobs Adverse Impact Research Grant

2019-Present Secretary, Northeastern Chapter of the International Personnel Assessment Council.

2016-Present Head of the Ph.D. program in Industrial and Organizational Psychology, City University of New York.

2018-Present Program committee for the Talent Analytics Conference, Society for Industrial and Organizational Psychology

2012-2015	Chair of the Institutional Review Committee, Society for Industrial and Organizational Psychology
2010-2011	President of the Metropolitan New York Association for Applied Psychology
2009-2010	Vice-president of the Metropolitan New York Association for Applied Psychology
2008-2009	Treasurer of the Metropolitan New York Association for Applied Psychology
2007-2008	Secretary of the Metropolitan New York Association for Applied Psychology
2009-Present	Editorial board for the <i>Journal of Business and Psychology</i>
2012-Present	Editorial board for the <i>Journal of Applied Psychology</i>
2017-Present	Editorial board for the <i>Organizational Research Methods</i>
2017-Present	Editorial board for <i>Industrial and Organizational Psychology</i>
2018-Present	Editorial board for <i>International Journal of Selection and Assessment</i>
2019-Present	Editorial board for <i>Personnel Assessment and Decisions</i>

Professional Memberships

- Members of the International Personnel Assessment Council
- Members of the International Testing Commission
- Member of the American Psychological Association
- Member of the Society for Industrial and Organizational Psychology
- Member of the Academy of Management
- Member of the Metropolitan New York Association for Applied Psychology
- National member of Psi Chi

Media Interviews and Media Coverage

- TLNT (6/5/14): “Technology Insights: How Big Data Can Help HR Drive Recognition” <http://www.tlnt.com/2014/06/03/technology-insights-how-big-data-can-help-hr-drive-recognition/>
- BusinessWeek Online Interactive Case Study: “Maintaining Employee Engagement” <http://www.businessweek.com/stories/2009-01-16/the-issue-maintaining-employee-engagementbusinessweek-business-news-stock-market-and-financial-advice>
- The Investment Professional: “Hive Mind: Organizational Psychology and the Origins of the Financial Crisis” http://www.theinvestmentprofessional.com/vol_2_no_2/hive-mind.html. May 2010

Government and Legal Coverage of Research

- My research on the impact of stereotype threat was referenced in the Brief of the American Association for Affirmative Action as Amicus Curiae to the U.S. Supreme Court in support of the respondents in *Fisher v. University of Texas, Austin*.
- The outcomes of the Baruch College NSF-REU program were referenced in the statements of Dr. Myron P. Gutmann, Assistant Director, Social, Behavioral, and Economic Sciences at the National Science Foundation to the Committee on Science,

Space, and Technology Subcommittee on Research and Science Education, United States House of Representatives on June 2, 2011.

Appendix C
List of Information Sources Used

Information Sources Used

In preparing this report, we relied on the following information and data sources. The sources used from the scientific literature, United States Department of Labor, United States Bureau of Labor Statistics, and City of New York are indicated as footnotes throughout the report.

- 33-2021.00 - Fire Inspectors and Investigators.pdf
- 47-4011.00 - Construction and Building Inspectors.pdf
- Associate Boiler (2020)_NOE.pdf.pdf
- Associate Construction (2016)_NOE.pdf.pdf
- Associate Elevator Inspector (2020)_NOE.pdf
- Associate FPI (2019)_NOE.pdf
- Associate Hoists and Rigging (2020) .pdf
- Associate Low Pressure Boiler (2020) (NOE) .pdf
- Associate Plumbing Inspector (2020)_NOE.pdf
- Construction Inspector (2019)_NOE.pdf
- Elevator Inspector (2019)_NOE.pdf
- Fire Protection Inspector (2020)_NOE.pdf
- Low Pressure Boiler (2020)_NOE.pdf
- Multi-Discipline Inspector (2020)_NOE.pdf
- [6] Corrected Complaint.pdf
- Chalmers_SuppProd-000075-Chalmers_SuppProd-000154.pdf
- Chalmers_SuppProd-000155-Chalmers_SuppProd-000208.pdf
- Chalmers_SuppProd-000014-Chalmers_SuppProd-000048.pdf
- Chalmers -- DCAS Data Supplement - Associate Inspector (Construction) (Jan 2004 to April 2020 - (# Legal 11791573).xlsx
- Chalmers -- DCAS Supplement -- Education Information - (# Legal 11803590).xlsx
- FDNY LIt Data - Inspector Title Employee Data (Period Spanning Jan 2004 to April 2020).xlsx
- Chalmers -- DCAS Data Supplement - Associate Inspector (Construction) (Jan 2004 to April 2020 - (# Legal 11791573).xlsx
- cbu004-engineering-and-scientific-agreement-03032008-to-03022010.pdf
- cbu53-building-and-construction-inspectors-040105-to-120207.pdf
- cbu53-building-and-construction-inspectors-120307-to-121509.pdf
- ems-moa-2010-2018.pdf
- 2009-2017-building-construction-inspectors-MOA.pdf
- PLFPI-DCHA002972.pdf
- PLFPI-DCHA000058.pdf
- PLFPI-DCHA000062.pdf
- PLFPI-DCHA000069.pdf
- CHALMERS_FPI_LIT-00001357.pdf

- CHALMERS_FPI_LIT-00026601.pdf
- CHALMERS_FPI_LIT-00033694.pdf
- CHALMERS_FPI_LIT-00034608.pdf
- PLFPI-DCHA000847.pdf
- CHALMERS_FPI_LIT-00024543.pdf
- CHALMERS_FPI_LIT-00030815.pdf

Appendix D

Race by Job Title Percentages for Each Fiscal Year

Fiscal Year	Race	Fire Protection Inspector	Inspector (Construction)	Inspector (Elevators)	Inspector (Hoists & Rigging)	Inspector (Low Pressure Boiler)	Inspector (Multi-Discipline)	Inspector (Plumbing)	Inspector (Boilers)
2005	Asian	12.6%	8.8%	---	0.0%	25.0%	---	0.0%	---
	Black or African American	35.3%	27.9%	---	0.0%	0.0%	---	25.0%	---
	Hispanic	15.1%	11.8%	---	0.0%	0.0%	---	8.3%	---
	White	37.0%	51.5%	---	100.0%	75.0%	---	66.7%	---
2006	Asian	12.5%	10.8%	---	0.0%	20.0%	---	0.0%	---
	Black or African American	38.3%	27.7%	---	0.0%	0.0%	---	26.3%	---
	Hispanic	13.3%	12.0%	---	0.0%	0.0%	---	15.8%	---
	White	35.9%	49.4%	---	100.0%	80.0%	---	57.9%	---
2007	Asian	10.3%	9.2%	---	0.0%	0.0%	---	0.0%	---
	Black or African American	40.4%	26.5%	---	0.0%	0.0%	---	21.1%	---
	Hispanic	14.7%	13.3%	---	0.0%	0.0%	---	15.8%	---
	White	34.6%	51.0%	---	100.0%	100.0%	---	63.2%	---
2008	Asian	8.9%	13.4%	16.7%	0.0%	0.0%	---	0.0%	---
	Black or African American	47.4%	24.4%	50.0%	0.0%	0.0%	---	26.3%	---
	Hispanic	14.8%	11.8%	0.0%	0.0%	0.0%	---	15.8%	---
	White	28.9%	50.4%	33.3%	100.0%	100.0%	---	57.9%	---
2009	Asian	10.3%	14.0%	16.7%	0.0%	0.0%	---	0.0%	---
	Black or African American	47.4%	20.4%	50.0%	0.0%	0.0%	---	20.0%	---
	Hispanic	14.7%	10.8%	0.0%	0.0%	0.0%	---	15.0%	---
	White	27.6%	54.8%	33.3%	100.0%	100.0%	---	65.0%	---
2010	Asian	14.0%	11.8%	0.0%	0.0%	0.0%	---	0.0%	---
	Black or African American	40.4%	25.0%	100.0%	0.0%	0.0%	---	16.7%	---
	Hispanic	16.2%	7.9%	0.0%	0.0%	0.0%	---	16.7%	---
	White	29.4%	55.3%	0.0%	100.0%	100.0%	---	66.7%	---
2011	Asian	15.3%	9.8%	33.3%	0.0%	0.0%	---	0.0%	---
	Black or African American	41.7%	24.6%	33.3%	0.0%	0.0%	---	20.0%	---
	Hispanic	15.3%	8.2%	0.0%	0.0%	0.0%	---	13.3%	---
	White	27.8%	57.4%	33.3%	100.0%	100.0%	---	66.7%	---

Fiscal Year	Race	Fire Protection Inspector	Inspector (Construction)	Inspector (Elevators)	Inspector (Hoists & Rigging)	Inspector (Low Pressure Boiler)	Inspector (Multi-Discipline)	Inspector (Plumbing)	Inspector (Boilers)
2012	Asian	15.7%	8.0%	12.5%	0.0%	0.0%	0.0%	0.0%	---
	Black or African American	44.0%	20.0%	12.5%	0.0%	0.0%	0.0%	14.3%	---
	Hispanic	12.7%	8.0%	0.0%	0.0%	0.0%	0.0%	9.5%	---
	White	27.6%	64.0%	75.0%	100.0%	100.0%	100.0%	76.2%	---
2013	Asian	14.8%	5.9%	0.0%	0.0%	0.0%	14.3%	0.0%	---
	Black or African American	40.7%	21.6%	10.0%	37.5%	0.0%	14.3%	23.5%	---
	Hispanic	11.9%	3.9%	10.0%	12.5%	0.0%	0.0%	11.8%	---
	White	32.6%	68.6%	80.0%	50.0%	100.0%	71.4%	64.7%	---
2014	Asian	17.4%	8.2%	7.1%	0.0%	0.0%	25.0%	0.0%	---
	Black or African American	41.3%	24.6%	7.1%	44.4%	0.0%	12.5%	31.3%	---
	Hispanic	13.0%	4.9%	14.3%	0.0%	0.0%	0.0%	6.3%	---
	White	28.3%	62.3%	71.4%	55.6%	100.0%	62.5%	62.5%	---
2015	Asian	21.9%	11.1%	7.1%	0.0%	0.0%	33.3%	0.0%	---
	Black or African American	36.5%	26.4%	21.4%	50.0%	0.0%	0.0%	28.6%	---
	Hispanic	10.4%	11.1%	14.3%	0.0%	0.0%	0.0%	4.8%	---
	White	31.3%	51.4%	57.1%	50.0%	100.0%	66.7%	66.7%	---
2016	Asian	17.2%	14.5%	6.7%	0.0%	0.0%	20.0%	0.0%	---
	Black or African American	37.1%	26.4%	26.7%	50.0%	7.7%	20.0%	23.9%	---
	Hispanic	12.9%	16.4%	20.0%	12.5%	15.4%	0.0%	10.9%	---
	White	32.8%	42.7%	46.7%	37.5%	76.9%	60.0%	65.2%	---
2017	Asian	18.5%	16.1%	6.7%	10.0%	0.0%	25.0%	0.0%	---
	Black or African American	41.3%	24.8%	23.3%	30.0%	11.8%	25.0%	29.2%	---
	Hispanic	10.9%	18.0%	13.3%	20.0%	11.8%	0.0%	16.7%	---
	White	29.3%	41.0%	56.7%	40.0%	76.5%	50.0%	54.2%	---
2018	Asian	16.1%	16.0%	7.1%	14.3%	0.0%	0.0%	3.6%	---
	Black or African American	45.2%	29.1%	28.6%	28.6%	13.3%	33.3%	35.7%	---
	Hispanic	11.3%	16.0%	14.3%	14.3%	13.3%	0.0%	16.1%	---
	White	27.4%	39.0%	50.0%	42.9%	73.3%	66.7%	44.6%	---

Fiscal Year	Race	Inspector (Boilers)	Inspector (Plumbing)	Inspector (Multi-Discipline)	Inspector (Low Pressure Boiler)	Inspector (Hoists & Rigging)	Inspector (Elevators)	Inspector (Construction)	Fire Protection Inspector
2019	Asian	---	1.9%	0.0%	0.0%	14.3%	10.0%	15.5%	15.6%
	Black or African American	---	34.0%	33.3%	14.3%	28.6%	25.0%	31.1%	40.7%
	Hispanic	---	18.9%	0.0%	21.4%	14.3%	5.0%	15.9%	20.0%
	White	---	45.3%	66.7%	64.3%	42.9%	60.0%	37.5%	23.7%
2020	Asian	0.0%	1.7%	0.0%	0.0%	16.7%	8.8%	16.4%	19.9%
	Black or African American	50.0%	33.3%	25.0%	7.1%	33.3%	23.5%	27.7%	41.1%
	Hispanic	0.0%	21.7%	0.0%	21.4%	16.7%	5.9%	16.4%	18.5%
	White	50.0%	43.3%	75.0%	71.4%	33.3%	61.8%	39.5%	20.5%

Fiscal Year	Race	Associate Inspector (Boilers)	Associate Inspector (Plumbing)	Associate Inspector (Low Pressure Boiler)	Associate Inspector (Hoists & Rigging)	Associate Inspector (Elevators)	Associate Inspector (Construction)	Associate Fire Protection Inspector
2005	Asian	0.0%	0.0%	0.0%	0.0%	2.6%	5.3%	9.7%
	Black or African American	33.3%	0.0%	33.3%	0.0%	17.9%	22.8%	35.9%
	Hispanic	0.0%	7.1%	0.0%	0.0%	10.3%	8.8%	11.7%
	White	66.7%	92.9%	66.7%	100.0%	69.2%	63.2%	42.7%
2006	Asian	0.0%	0.0%	0.0%	0.0%	2.6%	4.5%	10.6%
	Black or African American	20.0%	0.0%	100.0%	0.0%	15.4%	20.9%	36.5%
	Hispanic	0.0%	0.0%	0.0%	0.0%	12.8%	9.0%	10.6%
	White	80.0%	100.0%	0.0%	100.0%	69.2%	65.7%	42.3%
2007	Asian	14.3%	0.0%	---	0.0%	5.1%	6.4%	9.5%
	Black or African American	28.6%	16.7%	---	0.0%	15.4%	25.5%	35.2%
	Hispanic	0.0%	5.6%	---	0.0%	12.8%	9.6%	12.4%
	White	57.1%	77.8%	---	100.0%	66.7%	58.5%	42.9%

Fiscal Year	Race	Associate Fire Protection Inspector	Associate Inspector (Construction)	Associate Inspector (Elevators)	Associate Inspector (Hoists & Rigging)	Associate Inspector (Low Pressure Boiler)	Associate Inspector (Plumbing)	Associate Inspector (Boilers)
2008	Asian	9.6%	6.7%	3.1%	0.0%	0.0%	0.0%	0.0%
	Black or African American	31.3%	24.0%	9.4%	0.0%	0.0%	16.7%	40.0%
	Hispanic	13.0%	12.5%	12.5%	0.0%	0.0%	5.6%	0.0%
	White	46.1%	56.7%	75.0%	100.0%	100.0%	77.8%	60.0%
2009	Asian	8.8%	6.4%	3.3%	0.0%	0.0%	0.0%	0.0%
	Black or African American	35.4%	23.6%	10.0%	0.0%	0.0%	17.6%	40.0%
	Hispanic	14.3%	12.7%	13.3%	0.0%	0.0%	11.8%	0.0%
	White	41.5%	57.3%	73.3%	100.0%	100.0%	70.6%	60.0%
2010	Asian	9.7%	9.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Black or African American	36.6%	23.0%	11.1%	0.0%	0.0%	14.3%	40.0%
	Hispanic	13.8%	13.1%	14.8%	0.0%	0.0%	7.1%	0.0%
	White	40.0%	54.9%	74.1%	100.0%	100.0%	78.6%	60.0%
2011	Asian	8.7%	10.2%	0.0%	0.0%	0.0%	0.0%	0.0%
	Black or African American	37.3%	20.4%	11.1%	0.0%	0.0%	7.1%	40.0%
	Hispanic	14.7%	13.9%	14.8%	0.0%	0.0%	14.3%	0.0%
	White	39.3%	55.6%	74.1%	100.0%	100.0%	78.6%	60.0%
2012	Asian	10.1%	10.4%	0.0%	0.0%	0.0%	0.0%	0.0%
	Black or African American	37.1%	21.7%	8.7%	0.0%	0.0%	7.1%	50.0%
	Hispanic	15.7%	15.1%	17.4%	0.0%	0.0%	14.3%	0.0%
	White	37.1%	52.8%	73.9%	100.0%	100.0%	78.6%	50.0%
2013	Asian	12.1%	8.8%	4.5%	0.0%	0.0%	0.0%	0.0%
	Black or African American	38.7%	19.5%	9.1%	0.0%	0.0%	7.7%	50.0%
	Hispanic	13.9%	15.0%	13.6%	0.0%	0.0%	15.4%	0.0%
	White	35.3%	56.6%	72.7%	100.0%	100.0%	76.9%	50.0%
2014	Asian	11.8%	9.3%	0.0%	---	0.0%	0.0%	0.0%
	Black or African American	39.6%	19.4%	10.5%	---	0.0%	0.0%	50.0%
	Hispanic	14.2%	14.8%	10.5%	---	0.0%	27.3%	0.0%

Fiscal Year	Race	Associate Fire Protection Inspector	Associate Inspector (Construction)	Associate Inspector (Elevators)	Associate Inspector (Hoists & Rigging)	Associate Inspector (Low Pressure Boiler)	Associate Inspector (Plumbing)	Associate Inspector (Boilers)
	White	34.3%	56.5%	78.9%	---	100.0%	72.7%	50.0%
2015	Asian	12.4%	10.2%	0.0%	0.0%	0.0%	0.0%	0.0%
	Black or African American	40.6%	18.5%	11.1%	0.0%	0.0%	6.3%	50.0%
	Hispanic	14.9%	13.9%	5.6%	0.0%	0.0%	18.8%	0.0%
	White	32.2%	57.4%	83.3%	100.0%	100.0%	75.0%	50.0%
2016	Asian	12.5%	8.8%	0.0%	0.0%	0.0%	0.0%	0.0%
	Black or African American	40.5%	17.6%	11.8%	0.0%	0.0%	11.8%	50.0%
	Hispanic	15.0%	14.7%	5.9%	0.0%	0.0%	17.6%	0.0%
	White	32.0%	58.8%	82.4%	100.0%	100.0%	70.6%	50.0%
2017	Asian	13.6%	10.3%	0.0%	0.0%	0.0%	0.0%	0.0%
	Black or African American	41.3%	18.4%	22.2%	50.0%	0.0%	11.1%	50.0%
	Hispanic	14.1%	13.8%	11.1%	0.0%	0.0%	16.7%	0.0%
	White	31.1%	57.5%	66.7%	50.0%	100.0%	72.2%	50.0%
2018	Asian	13.4%	9.3%	0.0%	0.0%	0.0%	0.0%	0.0%
	Black or African American	41.8%	17.3%	25.0%	100.0%	0.0%	11.1%	40.0%
	Hispanic	13.9%	14.7%	12.5%	0.0%	0.0%	16.7%	0.0%
	White	30.8%	58.7%	62.5%	0.0%	100.0%	72.2%	60.0%
2019	Asian	14.2%	10.8%	0.0%	0.0%	0.0%	0.0%	0.0%
	Black or African American	41.1%	17.2%	25.0%	100.0%	0.0%	6.7%	40.0%
	Hispanic	13.2%	14.0%	12.5%	0.0%	0.0%	20.0%	0.0%
	White	31.5%	58.1%	62.5%	0.0%	100.0%	73.3%	60.0%
2020	Asian	14.4%	9.2%	0.0%	0.0%	0.0%	0.0%	0.0%
	Black or African American	40.5%	17.2%	50.0%	100.0%	0.0%	0.0%	25.0%
	Hispanic	15.4%	16.1%	0.0%	0.0%	0.0%	0.0%	0.0%
	White	29.7%	57.5%	50.0%	0.0%	100.0%	100.0%	75.0%

Appendix E
Description of the Statistical Methodology Used in this Report

Description of the Statistical Methodology Used in this Report

This report uses two general classes of statistical analyses. The first general class is descriptive statistics. These statistical methods are used to quantitatively describe a set of data. Descriptive statistics can be used to condense large amounts of data into a smaller set of numbers representing what is typical in the data and the amount of variability in the data. A common descriptive statistic is the average (which is also called the mean in statistics terminology). These analyses simply represent the state of a set of data.

The second general class is inferential statistics. These statistical methods are used to evaluate the inferences about the generalizability of the relationships or differences observed in a sample to the population the sample is drawn from. Inferential statistics are based on the concept of null hypothesis significance testing (NHST). A hypothesis is a testable statement about the existence of relationships or differences in a population. NHST involves the specification of a hypothesis of no difference or relationship (called the null hypothesis) that the analyst attempts to reject. For example, a null hypothesis could be that the difference in the rate of White and Black employees in inspector job titles at FDNY and DOB is zero. An analyst either rejects or fails to reject a null hypothesis using data drawn from a sample of that population.

Rejecting a null hypothesis is evidence that any observed relationships or differences in the sample are not simply due to chance and are likely to represent the true relationships or differences in the population. If one rejects a null hypothesis, one is saying that results of an analysis are statistically significant and more than two standard deviations. For example, one could examine if the rate of White employees in inspector job titles at the FDNY is different from the rate of White employees in inspector job titles at the DOB. The null hypothesis would be that the rate of White employees at the DOB and FDNY is the same. If the results of the analysis of difference in the rates is statistically significant, the conclusion is that there are a different percentage of White employees at the two agencies (i.e., the null hypothesis is rejected and the difference in the rates is not zero). If an analyst fails to reject a null hypothesis, one is concluding that there is insufficient evidence to determine if the differences observed in a sample reflect differences in the population. Similar procedures are used in the case where one has data from a sample of a population or data for the entire population.

The determination of whether the null hypothesis is false and should be rejected is made using probabilities. Each inferential statistical analysis involves computing the probability of obtaining the observed statistical test results if the null hypothesis is true. The probabilities are computed using a distribution of possible values of the given test statistic if the null hypothesis is true (called a sampling distribution). Each possible value in the sampling distribution can be used to determine the probability for the value of a test statistic (or a larger value) occurring in the sampling distribution. Large probabilities (e.g., 0.78) indicate that obtaining the observed results is likely if the null hypothesis is true. Small probabilities (e.g., .05 or less) indicate that obtaining the observed result is unlikely if the null hypothesis is true. If the probability is small enough, it leads one to conclude that null hypothesis is not true given the observed results. The generally accepted threshold for a probability being small enough is a probability less than 0.05. This threshold is equivalent to 1.96, or approximately two standard deviations in most statistical distributions. As the number of standard deviations increase, the probability decreases. For

example, a standard deviation of 4 is associated with a probability of 0.0001 (less than one in ten thousand chance) and a standard deviation of 10 is associated with a probability of 0.000000000001 (less than one in a trillion chance).

If the probability of obtaining the particular value of a test statistic or a more extreme value of the test statistic is less than 0.05, an analyst can reject the null hypothesis and conclude that an observed difference or relationship is not due to chance. The 0.05 threshold can be concentrated at one end of a distribution or it can be split equally between both the upper and lower end of a distribution (i.e., the threshold is set at 0.025 at each end of the distribution). When the threshold probability is split across the two ends of a distribution, it is called a two-tailed test. This report uses two-tailed tests.

Specific Statistical Analyses Used to Examine Disparities in Race Composition between the FDNY and DOB

Several analyses that are commonly used to examine adverse impact were applied in this report. These analyses were used to examine differences in the percentage of the FDNY and DOB inspector workforce that are white or a minority.⁵⁷ Specifically, the 2SD test of the difference in proportions (i.e., Pooled Two-Sample Z-Score test) and Fisher's exact test were used to examine the impact of the hiring decisions on Black candidates.

The two standard deviation test (2SD) of the difference in proportions (i.e., Pooled Two-Sample Z-Score test) is a statistical test of the difference in proportions between two groups. In this case, the proportions compared are the proportion of White employees at the DOB and the proportion of the minority employees at the FDNY. This test is a form of a Z-test. To be considered statistically significant, the probability associated with the result of the statistical test needs to be less than 0.05 (i.e., 1.96 standard deviations). A statistically significant result is evidence of a disparity in the proportions.

The Fisher's exact test is a chi-square test based on a 2×2 contingency table. One of the factors in the table is group membership (e.g., White, Minority), and the other factor is the agency (e.g., DOB or FDNY). Like the other tests, Fisher's exact test compares differences in the race groups between the agencies. For example, the analysis could determine if there is a statistically significant disparity if 50 of 200 DOB employees in inspector job titles were Black (25%) and 150 of 200 FDNY employees in inspector job titles were Black (75%).

Race	DOB	FDNY
White	150	50
Minority	50	150
Total	200	200

⁵⁷ In the Workforce Profile Reports, the City of New York defines minority as all groups that are not White, including those in the Some Other Race category. In the analyses included in this report, those in the Some Other Race category were not included.

To be considered statistically significant, the probability associated with the result of the statistical significance test needs to be less than 0.05 (i.e., 1.96 standard deviations). A statistically significant result is evidence of a disparity in the proportions.

Specific Statistical Analyses Used to Examine Disparities in Compensation between the FDNY and DOB

Several approaches were used to examine differences in compensation. If there were statistically significant differences in the hourly pay for FDNY and DOB inspector job titles, t-tests and analysis of variance were conducted. A t-test is a statistical analysis that can be used to examine differences between two groups in their average value.⁵⁸ This analysis could be used to examine differences in the hourly pay or tenure for inspectors from the DOB vs. FDNY. An analysis of variance serves a similar purpose, but it can be used when there are more than two groups such as when comparing FDNY and DOB job titles on their hourly pay.⁵⁹ As part of these analyses, one can select specific group comparisons that are called planned comparisons. For example, when comparing FDNY and DOB inspector job titles, one can plan comparisons between the FDNY fire protection inspector against each of the DOB inspector job titles. These planned comparisons are similar to t-tests in which two groups are compared on the average value of an outcome such as hourly pay. If there were fewer than two employees in a job title, the planned comparison was not examined.

To examine if job title is related to hourly pay rate after controlling for job relevant factors that may explain part or all of the differences in pay, regression analyses were used. Regression analyses are common and appropriate for examining racial disparities in salary after taking into account job relevant explanatory factors for pay differences.⁶⁰

Ordinary least squares (OLS) multiple regression was used for these analyses. OLS regression creates a predictive equation for the straight line that best fits a set of data. The equation includes the outcome that one is trying to predict (e.g., hourly pay) and the variable used to make the prediction (e.g., job title, tenure). The equation takes the form of

$$\hat{Y} = b_0 + b_1X_1 + b_2X_2$$

where \hat{Y} is the predicted value of the outcome, b_1 and b_2 determine the slope of the line, and b_0 is the intercept. The intercept represents the point where the line crosses the y-axis of an x-y plane. For example, the intercept would be the predicted hourly pay when tenure is zero and the job title variable is zero. The slope indicates the amount of change in Y (e.g., hourly pay) for a one-unit change in X (e.g., tenure). For example, the slope would indicate the increases in hourly pay for every additional month of tenure. The intercepts and slopes are often referred to as the regression coefficients.

The regression coefficients in multiple regression reflect the unique relationship between the predictor and the outcome after the other variables have been accounted for. For example, in a

⁵⁸ Scherbaum, C. & Shockley, K. (2015).

⁵⁹ Scherbaum, C. & Shockley, K. (2015).

⁶⁰ Sady, K. & Aamodt, M. (2017).

Noonan, P.M. & Biddle, D.A. (2010).

regression model that predicts hourly pay from tenure and job title, the regression coefficient for tenure represents the relationship between tenure and salary after controlling for job title.

There are two primary statistical significance tests for regression analyses. The first is the statistical significance of the entire regression equation. That is, as a set, do the variables entered into the equation predict the outcome? The second is the statistical significance tests of the individual regression coefficients. For example, is job title a statistically significant predictor of hourly pay? Only regression models that are statistically significant should be interpreted. For models that are statistically significant, only regression coefficients that are significant should be interpreted.

Appendix F
Analysis of the Tenure of FDNY and DOB Inspectors

Inspector Job Titles

As an initial comparison of the inspector job titles at the FDNY and DOB we compared the average tenure with the City in months by fiscal year. This comparison was performed using a t-test which is an analysis appropriate to use when comparing the average value between two groups.⁶¹ To understand the magnitude of the difference, the effect size Cohen's *d* was used. This effect size standardizes the difference between the groups.⁶² For example, a value of 1.0 is interpreted as a one standard deviation difference between the groups.

Over a period of 16 years, the FDNY inspectors had statistically significantly longer tenure with the City than DOB inspectors in 11 years (see Table 27). There were no statistically significant differences in tenure with the City in four years. The only year that DOB inspectors had statistically significantly longer tenure was 2020. In that year, there was a large increase in the number of employees in inspector job titles at the DOB including some multi-discipline and boiler inspectors with exceptionally long tenure with the City.

Table 27

Fiscal Year	Sample Size		Mean		Statistically Significant	Effect Size Cohen's <i>d</i>
	FDNY	DOB	FDNY	DOB		
2005	121	105	91.74	50.87	Yes	0.558
2006	131	117	91.28	49.09	Yes	0.578
2007	139	132	89.94	53.71	Yes	0.477
2008	138	159	87.41	41.14	Yes	0.622
2009	121	134	81.70	47.99	Yes	0.436
2010	145	107	68.82	56.39	No	0.166
2011	155	91	62.35	64.46	No	-0.030
2012	155	100	66.95	57.59	No	0.131
2013	143	104	74.61	57.91	No	0.238
2014	140	116	80.49	51.68	Yes	0.414
2015	112	135	82.28	48.85	Yes	0.471
2016	135	220	75.50	35.40	Yes	0.578
2017	110	292	88.08	36.23	Yes	0.758
2018	142	344	71.58	43.48	Yes	0.401
2019	160	379	58.13	41.96	Yes	0.257
2020	181	508	53.18	72.25	Yes	-0.229

This comparison was repeated using job titles for each fiscal year. The average tenure for each inspector job title is reported in Table 28.

⁶¹ Scherbaum, C. & Shockey, K. (2015).

⁶² Cohen, J. (1992). A power primer. *Psychological Bulletin*, 112(1), 155–159.

Table 28

Fiscal Year	Fire Protection Inspector	Inspector (Construction)	Inspector (Elevators)	Inspector (Hoists & Rigging)	Inspector (Low Pressure Boiler)	Inspector (Multi-Discipline)	Inspector (Plumbing)	Inspector (Boilers)
2005	91.74	60.19	---	40.33	13.00	---	30.96	---
2006	91.28	54.78	---	23.40	29.40	---	34.63	---
2007	89.94	60.82	---	40.00	13.00	---	28.42	---
2008	87.41	44.28	6.00	34.67	21.80	---	37.58	---
2009	81.70	52.84	16.33	17.25	33.80	---	43.20	---
2010	68.82	58.01	32.00	33.67	45.80	---	57.28	---
2011	62.35	65.12	19.00	45.67	57.80	---	76.67	---
2012	66.95	72.89	12.25	57.67	32.44	1.00	57.09	---
2013	74.61	73.73	17.20	25.00	44.44	8.88	79.18	---
2014	80.49	60.72	21.36	35.33	53.43	18.56	70.81	---
2015	82.28	53.80	26.71	46.33	49.86	30.29	51.45	---
2016	75.50	43.31	18.13	24.38	32.62	42.83	29.15	---
2017	88.08	40.59	20.58	23.00	35.17	56.60	31.78	---
2018	71.58	47.30	31.83	22.57	40.81	67.50	35.97	---
2019	58.13	42.15	36.90	27.25	41.33	78.50	42.57	---
2020	53.18	72.99	80.92	39.33	46.73	105.80	64.83	219.00

To determine if there were statistically significant differences in the tenure with the City for FDNY and DOB inspector job titles, an analysis of variance was conducted. This analysis is appropriate when comparing the averages of more than two groups.⁶³ As part of this analysis, planned comparisons of the FDNY fire protection inspector against each of the DOB inspector job titles were executed. These analyses are similar to t-tests in which two groups are compared on the average value of an outcome such as tenure. If there were fewer than two employees in a job title, the planned comparison was not examined.

The results are presented for inspector job titles in Table 29. Values that are positive indicate that fire protection inspectors had longer tenure. Values with a star (*) indicate the difference is statistically significant. There were few instances where DOB inspectors had statistically significantly longer tenure. There are many instances where the tenure was statistically equivalent or the FDNY inspectors had statistically significantly longer tenure.

⁶³ Scherbaum, C. & Shockley, K. (2015).

Table 29

Fiscal Year	Fire Protection Inspector vs.						
	Inspector (Construction)	Inspector (Elevators)	Inspector (Hoists & Rigging)	Inspector (Low Pressure Boiler)	Inspector (Multi-Discipline)	Inspector (Plumbing)	Inspector (Boilers)
2005	31.55*	---	51.41	78.74*	---	60.78*	---
2006	36.50*	---	67.88*	61.88	---	56.65*	---
2007	29.13*	---	49.94	76.94*	---	61.52*	---
2008	43.14*	81.43*	52.75	65.61	---	49.83*	---
2009	28.86*	65.37	64.45	47.90	---	38.50*	---
2010	10.81	---	36.82	35.15	---	11.54	---
2011	-2.77	43.36	16.67	4.56	---	-15.31	---
2012	-5.93	54.71*	9.28	34.51	69.96	9.86	---
2013	-0.88	57.41*	49.61*	30.16	65.73*	-4.57	---
2014	19.76	59.13*	45.15	27.06	61.93*	9.67	---
2015	28.48*	55.56*	35.94	32.42	51.99	30.82	---
2016	32.19*	57.38*	51.13*	42.89*	32.67	46.36*	---
2017	47.49*	67.50*	65.08*	52.92*	31.48	56.30*	---
2018	24.29*	39.76*	49.01	30.77	4.09	35.62*	---
2019	15.98*	21.23	30.88	16.80	-20.37	15.56	---
2020	-19.81*	-27.74	13.85	6.45	-52.62	-11.65	-165.82*

Associate Inspector Job Titles

As an initial comparison of the associate inspector job titles at the FDNY and DOB we compared the average tenure with the City in months by fiscal year. This comparison was performed using a t-test which is an analysis appropriate to use when comparing the average value between two groups.⁶⁴ To understand the magnitude of the difference, the effect size Cohen's *d* was used. This effect size standardizes the difference between the groups.⁶⁵ For example, a value of 1.0 is interpreted as a one standard deviation difference between the groups.

Over a period of 16 years, the FDNY associate inspectors had statistically significantly longer tenure with the City than DOB inspectors in 14 years (see Table 30). There were no statistically significant differences in tenure with the City in two years.

⁶⁴ Scherbaum, C. & Shockley, K. (2015). *Methods for Analysing Quantitative Data for Business and Management Students*. London: Sage.

⁶⁵ Cohen, J. (1992). A power primer. *Psychological Bulletin*, 112(1), 155–159.

Table 30

Fiscal Year	Sample Size		Mean		Statistically Significant	Effect Size Cohen's d
	FDNY	DOB	FDNY	DOB		
2005	104	132	174.17	105.41	Yes	0.903
2006	105	137	185.03	104.99	Yes	1.053
2007	106	171	188.00	100.50	Yes	1.122
2008	116	173	188.30	101.88	Yes	1.096
2009	148	177	177.86	107.67	Yes	0.844
2010	146	182	185.53	116.81	Yes	0.854
2011	152	168	185.18	126.27	Yes	0.739
2012	161	161	185.08	137.02	Yes	0.588
2013	173	154	184.19	144.53	Yes	0.467
2014	169	144	195.31	159.49	Yes	0.416
2015	205	158	182.21	160.08	Yes	0.250
2016	205	150	189.56	162.29	Yes	0.303
2017	215	141	187.71	166.67	Yes	0.220
2018	211	126	189.97	173.09	No	0.173
2019	215	147	184.19	159.23	Yes	0.245
2020	214	112	182.13	168.54	No	0.132

This comparison was repeated using job titles for each fiscal year. The average tenure for each associate inspector job title is reported in Table 31.

Table 31

Fiscal Year	Associate Fire Protection Inspector	Associate Inspector (Construction)	Associate Inspector (Elevators)	Associate Inspector (Hoists & Rigging)	Associate Inspector (Low Pressure Boiler)	Associate Inspector (Plumbing)	Associate Inspector (Boilers)
2005	174.17	81.30	81.30	171.80	107.38	103.64	33.00
2006	185.03	89.35	89.35	151.33	206.00	73.92	53.00
2007	188.00	93.35	93.35	163.33	---	72.28	85.71
2008	188.30	91.15	91.15	28.00	19.00	84.28	108.60
2009	177.86	96.10	96.10	60.50	31.00	94.94	120.60
2010	185.53	104.22	104.22	72.50	43.00	111.64	132.60
2011	185.18	116.22	116.22	84.50	55.00	121.64	144.60
2012	185.08	142.00	121.96	96.50	67.00	120.43	151.00
2013	184.18	151.66	128.22	88.00	79.00	113.85	163.00
2014	195.31	167.30	144.95	---	105.50	112.09	175.00

Fiscal Year	Associate Fire Protection Inspector	Associate Inspector (Construction)	Associate Inspector (Elevators)	Associate Inspector (Hoists & Rigging)	Associate Inspector (Low Pressure Boiler)	Associate Inspector (Plumbing)	Associate Inspector (Boilers)
2015	182.21	169.86	154.28	59.50	117.50	106.81	187.00
2016	189.56	172.56	156.76	38.00	103.33	111.65	199.00
2017	187.71	184.30	143.89	50.00	42.00	115.26	211.00
2018	189.97	197.56	136.56	62.00	50.33	125.26	193.40
2019	184.19	169.49	136.13	74.00	62.33	131.76	205.40
2020	182.13	178.61	58.50	84.00	55.00	65.60	176.25

To determine if there were statistically significant differences in the tenure with the City for FDNY and DOB associate inspector job titles, an analysis of variance was conducted. This analysis is appropriate when comparing the averages of more than two groups.⁶⁶ As part of this analysis, comparisons of the FDNY associate fire protection inspector against each of the DOB associate inspector job titles were executed. These analyses are similar to t-tests in which two groups are compared on the average value of an outcome such as tenure. If there were fewer than two employees in a job title, the comparison was not examined.

The results are presented for associate inspector job titles in Table 32. Values that are positive indicate that associate fire protection inspectors had longer tenure. Values with a star (*) indicate the difference is statistically significant. There was no instance where DOB associate inspectors had statistically significantly longer tenure. There are many instances where the tenure was statistically equivalent or the FDNY associate inspectors had statistically significantly longer tenure.

Table 32

Fiscal Year	Associate Fire Protection Inspector vs.					
	Associate Inspector (Construction)	Associate Inspector (Elevators)	Associate Inspector (Hoists & Rigging)	Associate Inspector (Low Pressure Boiler)	Associate Inspector (Plumbing)	Associate Inspector (Boilers)
2005	55.79*	92.87*	2.37	67.17	70.53*	141.17*
2006	66.63*	95.68*	33.70	---	111.11*	132.03*
2007	80.61*	94.65*	24.67	---	115.72*	102.29*
2008	79.51*	97.15*	---	---	104.02*	79.70*
2009	64.56*	81.77*	---	---	82.92*	57.27
2010	65.00*	81.31*	---	---	73.89*	52.93

⁶⁶ Scherbaum, C. & Shockley, K. (2015).

Fiscal Year	Associate Fire Protection Inspector vs.					
	Associate Inspector (Construction)	Associate Inspector (Elevators)	Associate Inspector (Hoists & Rigging)	Associate Inspector (Low Pressure Boiler)	Associate Inspector (Plumbing)	Associate Inspector (Boilers)
2011	55.55*	68.96*	---	---	63.54*	40.58
2012	42.30*	63.12*	---	---	64.65*	34.08
2013	32.53*	55.96*	---	---	70.34*	21.19
2014	28.01*	50.36*	---	---	83.22*	20.31
2015	12.35	27.94	---	---	75.40*	-4.79
2016	17.00	32.80	---	86.23	77.91*	-9.44
2017	3.41	43.82	---	---	72.44*	-23.29
2018	-7.59	53.40*	---	139.63*	64.70*	-3.43
2019	14.70	48.60	---	121.85*	52.42*	-21.21
2020	3.51	---	---	---	116.53*	5.88